99th Congress
1st Session

COMMITTEE PRINT

(98-87)/(99-13)

REBUILDING OF THE NATION'S AIR TRAFFIC CONTROL SYSTEM

(Has Safety Taken a Back Seat to Expediency?)

REPORT

OF THE

SUBCOMMITTEE ON INVESTIGATIONS AND OVERSIGHT

OF THE

COMMITTEE ON PUBLIC WORKS AND TRANSPORTATION

HOUSE OF REPRESENTATIVES

AUGUST 1985

Printed for the use of the Committee on Public Works and Transportation

---

U.S. GOVERNMENT PRINTING OFFICE
52-278 O WASHINGTON : 1985

H642-13

98TH CONGRESS

COMMITTEE ON PUBLIC WORKS AND TRANSPORTATION

JAMES J. HOWARD, New Jersey, *Chairman*

GLENN M. ANDERSON, California
ROBERT A. ROE, New Jersey
JOHN B. BREAUX, Louisiana
NORMAN Y. MINETA, California
JAMES L. OBERSTAR, Minnesota
HENRY J. NOWAK, New York
ROBERT W. EDGAR, Pennsylvania
ROBERT A. YOUNG, Missouri
NICK JOE RAHALL II, West Virginia
DOUGLAS APPLEGATE, Ohio
GERALDINE A. FERRARO, New York
BRIAN J. DONNELLY, Massachusetts
DONALD JOSEPH ALBOSTA, Michigan
RON DE LUGO, Virgin Islands
GUS SAVAGE, Illinois
FOFO I.F. SUNIA, American Samoa
KATIE HALL, Indiana
DOUGLAS H. BOSCO, California
JAMES F. McNULTY, JR., Arizona
JIM MOODY, Wisconsin
ROBERT A. BORSKI, Pennsylvania
JOE KOLTER, Pennsylvania
TIM VALENTINE, North Carolina
EDOLPHUS TOWNS, New York
WILLIAM O. LIPINSKI, Illinois
MICHAEL A. ANDREWS, Texas
TOM J. VANERGRIFF, Texas
J. ROY ROWLAND, Georgia
JAMES McCLURE CLARKE, North Carolina
ROBERT E. WISE, JR., West Virginia

GENE SNYDER, Kentucky
JOHN PAUL HAMMERSCHMIDT, Arkansas
BUD SHUSTER, Pennsylvania
ARLAN STANGELAND, Minnesota
NEWT GINGRICH, Georgia
WILLIAM F. CLINGER, JR., Pennsylvania
GUY MOLINARI, New York
E. CLAY SHAW, JR., Florida
BOB McEWEN, Ohio
FRANK WOLF, Virginia
THOMAS E. PETRI, Wisconsin
HAL DAUB, Nebraska
LYNN MARTIN, Illinois
VIN WEBER, Minnesota
ROBERT F. (BOB) SMITH, Oregon
DON SUNDQUIST, Tennessee
NANCY L. JOHNSON, Connecticut
RON PACKARD, California

SUBCOMMITTEE ON INVESTIGATIONS AND OVERSIGHT

ELLIOTT H. LEVITAS, Georgia, *Chairman*

ROBERT A. ROE, New Jersey
J. ROY ROWLAND, Georgia
ROBERT E. WISE, JR., West Virginia
JOHN B. BREAUX, Louisiana
HENRY J. NOWAK, New York
GERALDINE A. FERRARO, New York
DONALD JOSEPH ALBOSTA, Michigan
ROBERT A. BORSKI, Pennsylvania
WILLIAM O. LIPINSKI, Illinois
JAMES J. HOWARD, New Jersey
(Ex Officio)

GUY MOLINARI, New York
NEWT GINGRICH, Georgia
E. CLAY SHAW, JR., Florida
BOB McEWEN, Ohio
DON SUNDQUIST, Tennessee
NANCY L. JOHNSON, Connecticut
GENE SNYDER, Kentucky
(Ex Officio)

99TH CONGRESS

COMMITTEE ON PUBLIC WORKS AND TRANSPORTATION

JAMES J. HOWARD, New Jersey, *Chairman*

GLENN M. ANDERSON, California
ROBERT A. ROE, New Jersey
JOHN B. BREAUX, Louisiana
NORMAN Y. MINETA, California
JAMES L. OBERSTAR, Minnesota
HENRY J. NOWAK, New York
ROBERT W. EDGAR, Pennsylvania
ROBERT A. YOUNG, Missouri
NICK JOE RAHALL II, West Virginia
DOUGLAS APPLEGATE, Ohio
RON DE LUGO, Virgin Islands
GUS SAVAGE, Illinois
FOFO I.F. SUNIA, American Samoa
DOUGLAS H. BOSCO, California
JIM MOODY, Wisconsin
ROBERT A. BORSKI, Pennsylvania
JOE KOLTER, Pennsylvania
TIM VALENTINE, North Carolina
EDOLPHUS TOWNS, New York
WILLIAM O. LIPINSKI, Illinois
MICHAEL A. ANDREWS, Texas
J. ROY ROWLAND, Georgia
ROBERT E. WISE, JR., West Virginia
KENNETH J. GRAY, Illinois
CHESTER G. ATKINS, Massachusetts
PETER J. VISCLOSKY, Indiana
JAMES A. TRAFICANT, JR., Ohio
CATHY (Mrs. GILLIS) LONG, Louisiana
CARL C. PERKINS, Kentucky

GENE SNYDER, Kentucky
JOHN PAUL HAMMERSCHMIDT, Arkansas
BUD SHUSTER, Pennsylvania
ARLAN STANGELAND, Minnesota
NEWT GINGRICH, Georgia
WILLIAM F. CLINGER, JR., Pennsylvania
GUY MOLINARI, New York
E. CLAY SHAW, JR., Florida
BOB McEWEN, Ohio
THOMAS E. PETRI, Wisconsin
DON SUNDQUIST, Tennessee
NANCY L. JOHNSON, Connecticut
RON PACKARD, California
SHERWOOD BOEHLERT, New York
TOM DELAY, Texas
SONNY CALLAHAN, Alabama
DEAN A. GALLO, New Jersey
HELEN DELICH BENTLEY, Maryland
JIM LIGHTFOOT, Iowa
DAVID S. MONSON, Utah

SUBCOMMITTEE ON INVESTIGATIONS AND OVERSIGHT

JAMES L. OBERSTAR, Minnesota, *Chairman*

J. ROY ROWLAND, Georgia
MICHAEL A. ANDREWS, Texas
KENNETH J. GRAY, Illinois
CHESTER G. ATKINS, Massachusetts
JAMES A. TRAFICANT, JR., Ohio
JOHN B. BREAUX, Louisiana
DOUGLAS APPLEGATE, Ohio
DOUGLAS H. BOSCO, California
JIM MOODY, Wisconsin
CARL C. PERKINS, Kentucky
JAMES J. HOWARD, New Jersey
(Ex Officio)

NEWT GINGRICH, Georgia
GUY MOLINARI, New York
E. CLAY SHAW, JR., Florida
BOB McEWEN, Ohio
DON SUNDQUIST, Tennessee
NANCY L. JOHNSON, Connecticut
RON PACKARD, California
GENE SNYDER, Kentucky
(Ex Officio)

CONTENTS

	Page
Foreword	VII
Letter of Transmittal	IX
Background	1
Introduction	2
Overworked Controllers	4
Average Workweek	4
Other Conditions	6
Effect on the Margin of Safety	7
Traffic Control	8
Traffic Controls Used by FAA	8
Contrasting Positions	9
Supporting Testimony	11
Enough Controllers?	16
Number of Controllers in Major Facilities	16
System Numbers	18
Is FAA's Goal for Controllers Realistic?	19
The Need for Experienced Controllers	20
Margin of Safety	21
Measurement and Reporting	22
Impact of Strike on Safety	24
Perceptions of Quality Assurance	27
Derogatory References to QAP	28
Suppression of Errors	28
A Useful Tool for Punishing Controllers?	29
Other QAP Issues	31
Recent Evidence of a Declining Margin of Safety	31
Overall Safety Concern	32
Controller Stress	33
Rose Study	33
Methodology	33
Findings	34
Recommendations	35
"Implementation" of Rose Study	36
What Stress Authorities Say	38
Research Results of Stress Authorities	38
Comments on FAA Research	39
Approaches Needed to Reduce Stress	40
Conclusions of Stress Authorities	41
FAA on Stress	41
Communication Filters	45
The "Leesburg Letter"	45
Ralph Kiss: "In the Interest of Air Safety and Our Survival, We Must Act Now"	46
FAA's Difficulty Explaining Programs	48
FAA's "Information Management"	50
An Institutional Problem	54
FAA's Human Relations Difficulties	55
Background	55
Human Relations Problems	58
Stand Together or Fall Apart	58
Command and Obey	59
Getting Through?	60
When a Problem is not a Problem	62

FAA's Human Relations Difficulties—Continued
When a Problem is not a Problem—Continued
Page
"Communications" or "Perceptions" 62
"Vocal Minority" 62
"System Fully Recovered" 62
To Control Traffic or To Support Administration? 63
Have Committees Improved Human Relations? 64
Can Committees Replace Management? 64
What is "Human Relations?" 66
What are Human Relations Committees Doing? 66
What are Facility Advisory Boards Doing? 67
Where Do Unions Fit? 69
Performance Assessment 69
Epilogue: Follow-up Jones Report 71
Agency-Wide Survey Conducted by CAMI 73
Jones Findings 74
Declining Morale 76
Conclusions 81
Recommendations 84

FOREWORD

The Committee on Public Works and Transportation, through the Subcommittee on Investigations and Oversight, has been examining all facets of the safety of commercial aviation in the United States for 10 years. As the authorizing committee in the field of commercial aviation, it is our job to insure the safety of the traveling public and to question, if necessary, the performance of the federal agencies.

Last year, 14 million commercial flights criss-crossed the American skies carrying 356 million passengers. These passengers depend on an aviation system that provides as much safety as possible from both a technological and human standpoint. If those standards are not being met, this committee is mandated to direct the appropriate federal agencies to review their procedures.

In numerous hearings since the strike of the Professional Air Traffic Controllers Organization, this subcommittee has clearly identified the existence of serious and continuing problems of stress, staffing shortages, increasing traffic, lack of supervision and an unseasoned work force. All of these factors have combined to produce a diminishing margin of safety in the nation's airways.

The subcommittee has conducted an extensive investigation of air traffic control operations and management with complete documentation of procedures and individual incidents related to safety. The result is a series of recommendations that should provide the Federal Aviation Administration with clear direction in improving aviation safety.

The document prepared by the subcommittee should be of valuable assistance to the continued congressional monitoring of aviation safety. The Committee on Public Works and Transportation will continue its intensive and detailed monitoring of aviation safety issues and the implementation of the recommendations in this report.

JAMES J. HOWARD,
Chairman, Committee on Public Works
and Transportation.

LETTER OF TRANSMITTAL

HOUSE OF REPRESENTATIVES,
COMMITTEE ON PUBLIC WORKS AND TRANSPORTATION,
Washington, DC, August 1, 1985.

Hon. JAMES J. HOWARD,
Chairman, Committee on Public Works and Transportation,
House of Representatives, Washington, DC.

DEAR MR. CHAIRMAN: The Subcommittee on Investigations and Oversight completed an extensive and in-depth examination of the safety and rebuilding of the Nation's Air Traffic Control System following the walkout by members of the Professional Air Traffic Control Organization in August 1981.

The Subcommittee hearings focused on three areas: (1) the pace of the rebuilding effort (2) the Federal Aviation Administrator's management practices and (3) the impact of stress on the controller work force. Testimony evidenced that a severely reduced controller work force—both in numbers and experience—is today handling more traffic than before the strike. Alarmingly, some of the same management problems contributing to the 1981 strike continue to thrive within FAA.

I am pleased to forward the attached report which summarizes the results of that inquiry and contains the subcommittee's conclusions and recommendations.

I hope that you will find our work to be informative, objective and of timely benefit to the Committee on Public Works and Transportation, to the Congress, and to the Federal Aviation Administration.

Sincerely,

JAMES L. OBERSTAR,
Chairman, Subcommittee on
Investigations and Oversight.

BACKGROUND

The Professional Air Traffic Controllers Organization [PATCO] was founded in January 1968 to act as the sole bargaining agent for controllers in labor negotiations with the Federal Aviation Administration [FAA]. Relations between PATCO and FAA were turbulent, marked by several air traffic "slowdowns" and "sickouts" in the late 1960s and the 1970s. Divisive issues between the two organizations included working conditions, wages, staffing levels and equipment.

In early 1981, new contract negotiations began for the contract due to expire March 15, 1981. PATCO's list of 99 bargaining points included: (1) a $10,000 across-the-board increase for each controller; (2) a 32-hour workweek; (3) retirement after 20 years at 75 percent of base salary, and (4) a "survivable career" in which work conditions and pressures would not force early retirements.

After a series of unsuccessful negotiations, PATCO announced a strike deadline of June 22, 1981.

The Subcommittee on Investigations and Oversight convened a series of aviation safety hearings on June 18, 1981. The purpose of these hearings was to: (1) provide full disclosure of the reasons for the threatened PATCO walkout; (2) inquire as to the legality of the threatened walkout; (3) evaluate the adequacy of measures contemplated by FAA if the walkout materialized, and (4) examine the potential economic impact of a strike.

Those hearings led to a resumption of the stalled negotiations between then-Secretary of Transportation Drew Lewis and the PATCO leadership. A temporary accord was reached which averted the walkout that had been scheduled for 7:00 a.m., Monday, June 22. The PATCO leadership agreed to an annual increase of approximately $40 million in pay and benefits—substantially below its original demand. This agreement, however, was subsequently rejected by 95 percent of the PATCO membership. Negotiations began again on July 31, 1981, with PATCO asking for a pay and benefits package which FAA estimated at $680 million and the union leadership at $500 million. Despite attempts at further negotiations, the threatened job action took place on August 3, 1981, when approximately 12,000 controllers went on strike.

FAA immediately implemented a 1980 contingency plan utilizing team supervisors, training specialists, and military controllers, to control aircraft, while instituting a series of traffic control measures to limit volume.

Following the walkout, the subcommittee received numerous reports of system errors, near midair collisions, unqualified and medically disqualified personnel staffing radar positions and control towers, and allegations that the system was unsafe.

INTRODUCTION

This subcommittee's monitoring of the Air Traffic Control system predated the 1981 PATCO strike. Public hearings were held following the June 1978 PATCO slowdown—a slowdown which preceded contract negotiations. It became apparent then that it was a matter of time—or a matter of another contract confrontation—before the nation's air transportation system would face the situation that occurred on August 3, 1981.

Subsequent to those hearings, the subcommittee directed its investigative staff to become familiar with the operations of the Air Traffic Control system and with the problems that had been identified at that time.

Thus, when the 1981 walkout actually took place, we were in a position to continue to monitor system activities. Subcommittee staff reviewed records, listened to tapes, interviewed facility managers, interviewed controllers—both working and dismissed—and checked out, when possible, reports of system errors and near-collisions. Subcommittee Members, along with staff, visited Air Traffic Control facilities and "plugged in" with working controllers to monitor actual system operations. Additionally, we talked with and rode the jumpseat with flight crews to observe firsthand how the system was operating from the user's perspective.

The National Transportation Safety Board [NTSB] began an 8-week investigation into the safety of the Air Traffic Control system on August 18, 1981. That investigation, which was the focus of a subcommittee hearing on December 16, 1981, concluded that the ATC system was operated safety in the two months following the strike. However, several areas of concern involving the controller work force were identified, including weak first-line supervision, 6-day workweeks and extensive overtime, possible negative impacts of stress and fatigue and the lack of an FAA program to detect and monitor the onset of stress and fatigue. NTSB also found deficiencies in FAA's pre-strike management of ATC facilities and believed that significant changes in management attitude would be required to successfully rebuild the system. Chairman James King testified that safety of the system would depend on limiting the growth in air traffic during the rebuilding period. Premature or unmanaged traffic growth, King warned, would be the chief threat to safety until the controller force was rebuilt to full strength. Hearings following the walkout developed testimony on FAA's plans to address the concerns set forth in NTSB's report. We examined the potential impact upon the needs of the Nation's air carriers because of the reduced and unseasoned controller work force at many FAA facilities.

May 4, 1983 marked the beginning of a 12-day series of subcommittee hearings to assess the status of the Nation's Air Traffic Control system summarized by this report. Testimony was received from more than 50 witnesses, including the Secretary of Transportation, FAA Administrators, Associate Administrators, Air Route Traffic Control Center [ARTCC] Managers, Terminal Radar Control [TRACON] Tower Managers, FAA Regional Directors, the Federal Air Surgeon, Supervisors, Controllers, Human Relations Committee [HRC] and Facility Advisory Board [FAB] Chairmen, representa-

tives of the Professional Airways Systems Specialists [PASS] and the National Association of Air Traffic Specialists [NAATS], Chairman of the National Transportation Safety Board, representatives of the Air Line Pilots Association [ALPA], the Aviation Safety Institute [ASI], Industrial Psychologists, Medical Doctors, Lawrence Jones, chairman of a major FAA-sponsored management task force, and Dr. Robert Rose, principal investigator of a 5-year, $2.8 million FAA-sponsored study of controller stress.

The subcommittee's primary purpose in this extensive probe of the Nation's Air Traffic Control system was to assess the safety and the rebuilding of the system following the August 3, 1981, walkout by the members of PATCO. Additionally, the subcommittee focused on FAA's management practices, and on the potential impact of controller stress, which had been pinpointed by staff investigators as key factors to be examined.

Regarding the rebuilding process, we were aware that the system was faced with many new, unseasoned controllers, and the potential retirement of many experienced controllers. In light of these two factors, it was critical to know how much restraint FAA was exercising with regard to the amount of air traffic being funnelled into the Nation's airspace. Was the rebuilding pace too slow, too fast, or on schedule? What potential safety problems existed during the rebuilding process, and what was FAA doing to address those problems? Were controllers receiving adequate supervision, or were first-line supervisors too busy controlling live traffic to perform their primary duties? Were staffing levels adequate or did personnel shortages mandate the use of extensive overtime and/or restricted annual leave? Were allegations of unreported or uninvestigated system errors at some facilities true?

These were some of the questions that we hoped to resolve through our public hearings. In short, we wanted progress reports from FAA facilities as to their efforts, their successes, and their problems in the ongoing effort to rebuild the Air Traffic Control system.

With regard to stress, the subcommittee wanted to know what steps FAA had taken to detect the onset of stress in the controller work force, and how that program would be implemented throughout the system. We wanted to know if stress was being caused by the nature of the work itself—air traffic control—the work environment, or both. We wanted to know to what extent FAA management practices were ameliorating or exacerbating the stress problem. We also wanted to know if recommendations from the "Rose Report"—the most recent of about 28 FAA-sponsored stress studies since 1970—had been implemented.

Concerning FAA's management, the subcommittee wanted to identify those practices or attitudes which contributed to the PATCO strike, and whether those circumstances still existed. We wanted to know what FAA was doing to improve its management of human relations, and whether the human relations committees established in 1982 following 1981 subcommittee hearings were effective or were merely cosmetic. We wanted to evaluate whether the "Jones Report" recommendations had been implemented in truth as well as name. This report was the result of a study authorized by the Department of Transportation to investigate manage-

ment-employee relationships within the FAA and to recommend actions for improvement. We wanted to know to what extent top management is able to know what is going on "out in the trenches" and how effectively top management is able to communicate its goals to the work force. And finally, we wanted to know to what extent management practices might be contributing to declining morale, because those practices, particularly if not improved dramatically over what was reported by the Jones Task Force, can significantly impact the performance of controllers working under other than ideal conditions during the rebuilding effort.

Overworked Controllers

In the weeks immediately following the 1981 strike, controller morale was high. Controllers were willing to work extra hours on a temporary basis to keep the system functioning under adverse conditions; a "can-do" attitude prevailed. However, as weeks merged into months and years, the high work load continued, particularly for seasoned controllers in high-density facilities. Morale plummeted and fatigue set in.

Subcommittee hearings disclosed continued overtime, extensive use of supervisors as controllers, long periods of working radar without relief, and restrictions on the use of annual leave and sick leave. These conditions can impact the margin of safety in the system.

AVERAGE WORKWEEK

FAA assured subcommittee Members at the start of these hearings that controllers no longer were being overworked. FAA Administrator Helms testified that "No one is scheduled for and must work a 48-hour week today." He also stated that the average workweek was only 40.9 hours. Secretary Dole testified that "We expect to be able to return to our normal leave policy and return supervisors to their normal duties by June 1984." However, the hearings showed that controllers were, and will likely continue to be, overtaxed for the foreseeable future. Broad system averages presented by FAA masked high overtime, and other conditions of controller overwork.

The following statements on workweek averages were presented at the hearings:

> . . . developmental controllers are younger and, because they are only checked out on limited positions and sectors, they are working a 40-hour week. As a group, FPL [Full Performance Level] controllers are older, work the more complex or difficult positions and sectors, and usually work a 48-hour week. Moreover, they are providing the majority of OJT for new controllers. This situation will continue for at least a year because of the time needed to train and check out developmental controllers on new positions—*NTSB Special Investigation Report—Followup Study of the United States Air Traffic Control System, 1983.*

> Experienced controllers at the Chicago Center have had 6-day weeks for most of the last 2 years.—Letter from Administrator Helms to Senator Charles Percy (Sept. 1983).
>
> We still [work] six days a week continuously. It is done with the use of volunteers and we assign people overtime when we don't have enough volunteers.—Cleveland Center Supervisor Bromley (6/26/84).
>
> . . . full performance level controllers are once again working a six-day workweek.—Letter issued by St. Louis Air Traffic Control [ATC] tower to all pilots operating out of Lambert-St. Louis International Airport (Aug. 1983).
>
> We are working a lot of overtime . . . a lot of it is voluntary . . . in some cases they are forced to work overtime.—Atlanta Controller Damalas (6/26/84).
>
> Month after month controllers are being forced to work six-day workweeks and work overtime after a change of shift, e.g., after a week of midnights.—Letter to Administrator Helms from 135 Washington Center controllers, August 10, 1983.

Data gathered from hearing testimony indicated the following workweek averages at selected centers:

	Hours
Indianapolis	44.5
Memphis	42
Chicago	44
Atlanta	44
JFK Tower	44.6

These long workweeks raised the question: How was FAA able to report that the system-wide average workweek was 40.9 hours? NTSB Chairman James Burnett testified on June 7, 1983, that "You have to remember that the 41-hour figure . . . includes everyone that is in a certain job description. It includes the developmental controllers who do not have the demands on them for overtime that the full performance level controllers who are doing on-the-job training [do] . . . . It also includes people who are working on the fourth floor at 800 Independence Avenue—Washington, D.C.—who are actually not working controlling traffic."

The differing perceptions between Mr. Helms and controllers concerning overtime was exemplified in the following statement by Leesburg controller Jack Crouse:

> I have never been fond of overtime and made my wishes known to my immediate supervisor that I did not wish to work it. However, one day on the national news broadcast I watched Mr. Helms testifying before a subcommittee of Congress telling them that to his knowledge no controllers were being ordered or forced to work overtime. Now, that is not an exact quote because I can't remember exactly what he said. But I remember it very specifically because I am sitting in the cafeteria eating dinner at Leesburg, VA, working overtime that day. And I said, "If this is the case, what in the hell am I doing here?"

OTHER CONDITIONS

Controllers reported: extensive periods at their radar scopes without a break; first-line supervisors working as controllers; annual leave sometimes being limited to one week; disallowance of sick leave. Hearings testimony on these conditions follows:

Time at Radar Without Break:

> Both controllers and supervisors indicated that a potential fatigue factor was the time spent working a control position without a break, which could range between 1½ to 2 hours. A team supervisor at a level-five terminal tower/radar facility said that a controller could be scheduled for 2½ hours on a high work load radar position without a break, which could lead to his/her voice tiring or a mistake occurring. But he added that he did try to give controllers a 15-minute break or at least to place them on a less difficult position to give their voices a rest.—*NTSB Special Investigation Report—Follow-up Study of the United States Air Traffic Control System, 1983.*
>
> Controllers must frequently work their positions for two or more hours of intense traffic. Recently there have been several instances of controllers working radar for a total of six hours a shift. Mental alertness suffers considerably under these conditions.—Letter from 135 Washington Center controllers to Administrator Helms, Aug. 10, 1983.
>
> Controllers have complained to us about spending in excess of four hours on the boards, and by that I mean a radar unit, without relief.—Background testimony of John O'Hara, Staff Director and Counsel, Investigations and Oversight Subcommittee, Oct. 28, 1983.

Supervisors Working as Controllers:

> One of the problems that I have run into across the country is that supervisors who are supposed to be supervising are working as air traffic controllers and working the boards. We heard it from Mr. Kiss and we have heard it from witness after witness, and presumably a person who is supposed to be a supervisor should be supervising.—Chairman Levitas, June 26, 1984.
>
> I work a five-week schedule. . . . Three of those five weeks I am assigned to a radar position and the other two weeks someone takes my place so that I can work the desk [as supervisor]. That is the arrangement that we made within my area.—Response of Mr. Bromley, Cleveland Center Supervisor, to question of Chairman Levitas as to whether he was supervising or working radar, June 26, 1984.

Further that same day the following exchange between Levitas and Bromley took place:

> Mr. LEVITAS. Since you are working the boards . . . even though you are a supervisor, is that creating a problem for you to try to do the supervisory work?
>
> Mr. BROMLEY. It most assuredly does.

Mr. LEVITAS. The reason I say that is that according to information—we have received a document earlier this year from the Miami Air Route Traffic Control Center, and it came from the SUPCOM, which I gather is an acronym for Supervisory Committee——

Mr. BROMLEY. Yes, sir.

Mr. LEVITAS [continuing]. Of facility representatives; and the second item in this memorandum says "Supervisors are concerned about time available to perform administrative duties required with the amount of their time that is allotted to air supervision and control of traffic."

So is that the same problem you are experiencing in Cleveland as well?

Mr. BROMLEY. Yes, sir, it is.

Annual Leave:

By June 1984, Secretary Dole said, the agency expected to return to the normal leave policy. Controllers are already being advised at a number of facilities that they will be allowed only one week of leave at a time this summer.—Chairman Levitas, April 4, 1984.

Since last fall I would say that morale really began to show that it was ebbing. With the announcement of a restricted leave policy again this year and the viewpoint by most people that we will be on a restricted leave policy again next year, morale is very noticeably lower.—Mr. Bromley, Cleveland Center Supervisor, June 26, 1984.

Denial of sick leave, also, has been used to overwork controllers. Mr. Damalas, an Atlanta controller, testified on June 26, 1984, that he and three of his fellow controllers were denied sick leave by their supervisors when they reported that they felt too sick to work. Congressman Gingrich reported at the next day's hearing that controllers residing in his community in Georgia made statements to him to the effect of "I tried to call in sick; I couldn't. I went to work anyway. I have now worked *x* number of days in a row, and so forth."

EFFECT ON THE MARGIN OF SAFETY

These conditions of overwork can affect the margin of safety in the Air Traffic Control system as expressed in the following:

Controller workloads are such that capabilities are being overtaxed. This has led to a reduction in safety or a very high risk of a midair collision. Safety of the system is coming under jeopardy.—Memo from Ralph Kiss, Denver Air Traffic Facility Manager, to David Jones, Division Manager, May 24, 1984.

Well, I think that one thing that is at work is probably cumulative fatigue. I think it is a very dangerous practice to continue to have people working six-day weeks and working overtime.—Captain Duffy, President, Air Line Pilots Association, June 26, 1984.

I am trying to understand . . . the definition of safe. If there were incidents, circumstances where a particular fa-

cility that had somebody that was not fit for duty and shouldn't be on a scope, for example, and is forced to do so, would you consider that a safety hazard?—Congressman Molinari, June 26, 1984.

(Controllers Crouse and Damalas and Supervisor Bromley, responded that these conditions could, indeed, reduce the margin of safety in the system.)

Although 48-hour weeks and other indicators of overwork have declined in the 4 years since the strike, they have not disappeared, particularly at high-density facilities like Chicago, New York, Atlanta and Los Angeles. Those seasoned controllers and first-line supervisors who worked long and hard to keep the system going after the strike are the same individuals who are still doing it—but their morale is suffering, their health is threatened, and safety risks are involved.

Traffic Control

FAA uses a variety of traffic controls to adjust the capacity of the Air Traffic Control system to respond to traffic demands. Stringent controls—such as computerized flow control, airport slot restrictions, and increased trailing distances—were imposed immediately after the 1981 strike to ensure the safe and efficient handling of air traffic by only about one-third the number of controllers as pre-strike. These controls restricted both the amount of traffic and the peak loading of traffic at prime times and major airports. Coincidentally, these controls were aided by reduced traffic demands associated with the recession.

Subsequently, the traffic control "valve" has been gradually released by FAA to allow the ATC system to handle more traffic and greater peak-loading. There has been a parallel increase in the health of the economy, so that traffic has slightly exceeded pre-strike levels. The traffic expansion, which has been allowed by the gradual removal of traffic restrictions, has outpaced increases in controller numbers and experience levels. This has resulted both in continued overwork of controllers and in the ATC system often being pushed to its traffic capacity limits.

TRAFFIC CONTROLS USED BY FAA

FAA uses—or has used—flow control, slot allocation, resectorization, distance-in-trail requirements, and other controls to adjust traffic to system capacity.

Flow control is a nationwide computerized system operated by FAA's Central Flow Control facility in Washington, D.C. When the system detects bottlenecks due to weather or traffic conditions, the flow control system institutes pre-flight holding of aircraft to avoid overloading the system. Prior to the strike, most such bottlenecks were handled by maintaining aircraft in airborne holding patterns. Flow control was developed pre-strike but not used extensively until after the strike, when it became probably the most important control for keeping traffic within the capacity limits imposed by the greatly reduced work force. Under flow control, most delays are

handled by keeping aircraft on the ground, thus saving fuel and reducing airborne hazards.

Slot allocation, another form of flow control, was initiated post-strike to provide advanced scheduling of aircraft at 22 major airports to ensure that airport capacity was not exceeded. Each airport was given a maximum capacity rating not to be exceeded in scheduling—e.g., 45 departing aircraft per hour. About two months before schedule publication, each airline would submit its desired schedule to the Official Airline Guide [OAG]; FAA would review the schedules and, if exceeding capacity of airports, would trim such schedules. After an arbitration period, FAA would finalize schedules and submit them to OAG for publication.

Since the strike, slot allocations have been gradually removed. On May 4, 1983, Secretary Dole testified that restrictions had been lifted on five of the 22 major airports, would be lifted on another six by August (1983), and on all airports by the end of the year. This schedule wasn't met; FAA Acting Administrator Fenello testified on March 29, 1984, that slot allocation remained on four airports, but would be removed on all but one by April 1, 1984.

Like flow control, resectorization was planned prior to, but implemented after, the strike. The airspace assigned to an ATC facility is divided into sectors. Resectorization redefines the boundaries of these sectors. The justification for resectorization was a 1978 FAA study which found too many sectors in the ATC system, resulting in too many controllers. After resectoring, controllers must gain familiarity and experience on the newly defined sectors. Mr. Fenello testified on March 29, 1984, that the national resectorization program was nearly complete and that the number of sectors had been reduced from 721 to 575.

A closely related post-strike change, but one less drastic, was the combining of sectors. This was an extension of pre-strike procedures in which sectors were routinely combined during periods of light traffic. In many facilities after the strike, sectors were combined, at least temporarily, to enable fewer controllers to handle more airspace. We are not sure it is a change to be undertaken too routinely, given the experience level of today's controllers.

Distance-in-trail, another traffic control device, was modified following the strike. FAA testified that trailing distances between aircraft were increased post-strike from three miles to five miles in terminal areas and, en route, from five miles to "as much as 50 miles." The required en route distances have subsequently been reduced, Mr. Helms testified, to "30 miles, then 20, and now in most areas we are down to ten." An increased trail distance increases the margin of error but reduces capacity since fewer aircraft can use the given airspace.

CONTRASTING POSITIONS

In its 1983 follow-up report on the Air Traffic Control system, NTSB expressed concern that traffic restrictions were being removed and, thus, traffic increases allowed, before normal working conditions had been reestablished for controllers:

> The traffic volumes handled by the ATC system have been allowed to increase to 100 percent of pre-strike levels

> with only about 50 percent of the pre-strike work force. Return of the ATC system to 100-percent access to users is based on the assumption of continuing overtime work and reduced vacation time for many controllers. . . . The Safety Board is concerned that these increases, before supervisors are released to their previous roles, may have a deleterious effect on the level of safety. . . . As flow restrictions are relaxed, in-trail restrictions reduced, and traffic volumes increased, the controllers' work load is increased and the margin for error is reduced logarithmically. Moreover, the experience level of the work force remains minimal because of the large number of newly qualified controllers who were trained under less dense traffic conditions. Therefore, the same decisions and criteria . . . used to allow traffic and services to return to the 100-percent level, which have been successful thus far, are not valid for the remaining increments of the traffic volume, especially unrestricted access by users.

In line with this logic, NTSB concluded that:

> The Safety Board believes that traffic volumes should not be allowed to increase, especially in periodic peaks, beyond current levels, and that the lifting of restrictions should be delayed until sufficient controllers are trained and have gained experience to handle the increased traffic in a normal workweek, and until first-line supervisors and other staff personnel have returned to their normal duties.

FAA painted quite a different picture of the system and priorities for its post-strike recovery:

> The recovery schedule established in August 1981 estimated a capability to handle 100 percent of pre-strike traffic, with flow control in place, by May or June 1983. We have achieved that. Our next goal is to handle this traffic level without the extensive flow control instituted just after the strike. That should be achieved on schedule, by December. Finally, we expect to be able to return to our normal leave policy and return supervisors to their normal duties by June 1984. (Secretary of Transportation Elizabeth Dole, May 1983 hearing.)

Before closing, Mr. Chairman, there are a couple of issues I would like to briefly touch on. One has to do with the NTSB report's observation that facilities are being required by Washington to handle more air traffic than they are capable of handling. That is simply not true. It has never been true. I have been exceedingly cautious—if anything, overcautious—in approving additional operations. In fact, I have mostly turned down proposed increases in capacity developed by field facilities and provided to headquarters through regional offices, not because I don't trust their judgment, but because of my concern that we exercise extreme caution in this area. For example, recently I reduced substantially the proposed level of growth proposed by local management at seven locations. In not one

> single instance have we ever directed an increase. In addition to exercising extreme care in approving any additional capacity in the system, we also oversee the nationwide air traffic flow through our Central Flow Control Facility in Washington, D.C. When informed of bottlenecks or reductions in system capacity due to weather or other circumstances, Central Flow Control can and does implement necessary ground delay programs. . . . I want to assure you, though, that, while we have been working to improve our traffic management capabilities, we have been very conscious of system capacity and the need for carefully controlling expansion to ensure our controllers' ability to safely handle added traffic. (Mr. Helms, June 1983 hearing.)

Mr. Burnett, NTSB Chairman, described how NTSB's conclusion on the future of the system differed from FAA's in the following hearings exchange:

> Mr. GLICKMAN. Let me just ask you this: Have you had a chance to look at Mr. Helms' testimony?
>
> Mr. BURNETT. Yes, I have.
>
> Mr. GLICKMAN. . . . He says that you are just wrong, on the issue of traffic. He says, 'I have been exceedingly cautious, if anything, overcautious, in approving additional operations.' Are you saying he is wrong? Are you saying that he really hasn't been that cautious?
>
> Mr. BURNETT. Well, I am not in a position to argue with the Administrator about numbers of traffic at particular facilities right now. What I am saying is that I think that he has given priority to raising the level of traffic before he tended to the problems of getting supervisors back into their supervisory role and reducing the work hours. Now . . . I think that those problems could be handled if we maintained stricter limitations on traffic, and they have not been handled and we still have those problems existing. At least if they have been solved, we haven't received communication from the FAA that indicates that they have.

Thus, at the start of our year of ATC hearings, NTSB and FAA took opposing positions on the priority for removal of traffic restrictions. NTSB recommended that restrictions on traffic be maintained until both the controller work load returned to normal and the supervisors returned to their management positions. FAA indicated that it planned to reduce restrictions to let traffic return to normal and, *after* this had been achieved, to let the work force return to normal. FAA believed that there was more than sufficient capacity in the ATC system to achieve this.

SUPPORTING TESTIMONY

Hearings testimony from controllers, supervisors, facility managers, and FAA Administrators detailed the consequences of FAA's post-strike recovery plan in the face of NTSB's concern:

Mr. McGuirk. (Controller, Washington Center, Oct. 1983) . . . The reason that we four are here today is because of our very serious genuine concern with the air traffic system. We believe, I think collectively, that the fabric of the work force is strained to a point of near-collapse. We have seen traffic increases over the last six to eight months to volumes that have exceeded the pre-1981 traffic levels. We have been doing this air traffic control with fewer than 50 percent of the FPL controllers that we had prior to the strike.

Mr. Crouse. (Controller, Washington Center, Oct. 1983) . . . the staffing problem in conjunction with the increased traffic that we have been experiencing in the last couple of years . . . go hand in hand. It certainly appears to me that the figures would show that we are working a lot more aircraft with a lot fewer people and somewhere along the line it seems to me that safety has to be compromised in that situation.

Mr. Skirlick. (Controller, Los Angeles Center) Basically, I think some of us were talking before, one big objection we have to the whole system right now is that the ambience of the thing being on the edge at certain times of the day in certain sectors has gotten to a flash point at most centers. All we are asking is Mr. Helms to tell the truth about what our staffing situation actually is and that way we can, you know, deal with this animal in a better way. At the present time, if Mr. Helms comes out and says to the press that we only have voluntary overtime, that creates a new common denominator of work load upon controllers for the rest of their careers.

If they think this is a normal situation, we are here to tell you today it is not a normal situation, and it is not programmed to be a normal situation beyond the next year or two years in a lot of busier centers that were hit very hard by the PATCO strike.

Mr. Gallipault. (Aviations Safety Institute, Oct. 1983 . . . We probably have inexperienced controllers, we probably have too many airplanes. We probably, because of the weather, didn't have the contingency covered. I know the airlines don't want to hear this, but I think we have got to control the valve that governs the flow of traffic, again. That is the only remedy. If we are not going to bring in more controllers, if we can't find more, can't train them fast enough. . . . We either let airplanes come together or we slow the process down.

Mr. Levitas. (Quoting from a January 1983 memo by Mr. Dentley, Manager of the Atlantic Center, to the Manager of the Air Traffic Division, Southern Region, requesting additional controller positions, March 1984.)

The last paragraph of that same memorandum, on page 2: We realize that the Atlanta Center is not the only facility with control shortages. However, we believe it is necessary to again bring to your attention our concerns for filling them. The Atlanta Center is a key facility in the air-

space system. Any impact on its recovery would undoubtedly have a significant effect on the ATC system. Our traffic count records are being surpassed on a regular basis. Sector saturation is fairly common during peak en route rushes, placing added strain on controller capability. Additional work load sectors may, very likely, need to be established and staffed.

With no perceived relief in sight, there is a definite potential for controller morale to plummet. During a recent internal control group evaluation, comments such as: "They—the FAA—have abandoned us. We are concerned that this could result in many more of our potential retirees deciding to leave, impacting our ability to maintain our current position in the recovery, much less to continue to progress."

Mr. MOLINARI. But you said there are some troubled times ahead, and I'm wondering what you mean by that.

Mr. AZZARONE. (Controller, New York Center and Chairman of the Human Relations Committee, March 1984) Only that there are perceptions that the system is recovered. Sometimes, when the controllers see reports about traffic restrictions being alleviated or certain news articles alluding to the fact that the system is almost back to normal, particularly the traffic volume, it's depressing to them that the public at large is under the impression that the system has recovered or may be under that impression that the system has recovered; and we have not yet. It is only because there are a lot of dedicated people still giving 110 or 120 percent of themselves on a continual basis that the system is able to sustain itself.

Mr. MOLINARI. (June 1984) I think, Mr. Chairman, one of the other things that we find occurring, particularly in the last few months, is impossible scheduling. I have got some figures here showing in Denver between 0840 and 0902, 22 minutes, 39 arrivals at the Denver Airport.

We can beat that if we want to. Look at Atlanta, with due deference to the Chairman, between 0819 and 0821, two minutes, our carriers have scheduled 19 arrivals, 19 arrivals within two minutes. And between 1810 and 1824, or 14 minutes, 48 arrivals.

Now obviously it is impossible to meet those goals. So what is happening is the kind of phenomena that we are witnessing throughout the country today, increasing delays, increasing delays and increasing delays. The public is being fooled.

Mr. BROMLEY. (June 1984) . . . I understood Mr. Helms to say that we would never permit unrestrained access to the Air Traffic Control system again. As far as I am concerned, the skies are unrestrained. With the exception of one or two small airports, not small obviously, and with the exception of expanded quota flow and the in-trail restrictions that we meet every day in order to allow these airplanes to continue on their way, the skies are virtually unrestricted as far as I am concerned.

This places a great deal of strain on Cleveland Center, Cleveland being very unique in its position between the major terminals in New York, Chicago and Atlanta and Washington, and the business in Cleveland is dictated largely by the people east and west of us and we do an awful lot of accommodating. We don't have major airports inside our area. . . .

If the system would have been controlled the way I believe it was intended to have been because of the set of circumstances we find ourselves in, then the sectors that we use and the staffing that was dictated to us would be sufficient. But we have grown to a position I believe that is unrestrained. Ergo, if we don't go back to where we were before 1981, that is, with the sectors that we used to control the volume to eliminate congestion and give people the ability to handle that congestion, we are going in the wrong direction.

Mr. CROUSE. (June 1984) . . . I will say that if some of the peaks in the peaks and valleys system were smoothed out, we could possibly be able to handle more air traffic with the personnel that we have now. However, the peaks just seem to be getting higher and longer and the valleys seem to be showing up less and less. I would say we are getting close to the limit . . . I don't believe that we do have a lot more elasticity in it.

Capt. DUFFY. (President, Air Line Pilots Association, June 1984) The number of airplanes in the system is growing. For example, on June the 1st, United added 67 daily flights to Chicago alone.

In the period May 1 through July 2nd, American has added 49 daily flights to Chicago with a goal of doubling their number of operations at O'Hare to more than 300 by 1988.

One forecaster gives a range of predicted traffic growth over the next five years of 34 to 65 percent. Even Boeing feels the growth already and plans to add 5,300 workers to its Washington plants alone before the end of the year. We had better get our airspace ready to accommodate this growth.

Thus, this year of hearings provided overwhelming testimony "from the trenches" that FAA's removal of traffic restrictions during a period of expanding economic conditions increased air traffic, thereby placing intense pressure on controllers and the ATC system—a fulfillment of NTSB's concerns. Throughout the year, FAA assured the subcommittee that the ATC system could handle the traffic and, indeed, had excess capacity; consequently, there was no reason not to lift traffic restrictions as planned.

Finally, Admiral Engen, FAA's newly appointed Administrator, acknowledged on the last day of hearings that traffic was putting pressure on the capacity of the ATC system. This refreshing candor by an FAA Administrator came long after the problem was painfully apparent to controllers, supervisors, and managers:

Mr. LEVITAS. All right. Now, if we are not going to get some more seasoned controllers on board in a short period of time, what about flight restrictions? What about reimposition of slots at major hubs, 20 to 23 airports, and flow control?

Admiral ENGEN. We have implemented flow control at this time, as you are well aware, Mr. Chairman, and there are several things causing this constraint out there. One is the burgeoning economy. More people have money and are wanting to fly.

As a result, airlines are bringing in from storage airplanes that were sitting on the desert out there, and they're being pressed into service. Schedules have changed. The means of scheduling has changed in a way that we are addressing now . . . We have a shortage of controllers which can exacerbate the situation, but that shortage is not the limiting factor right now.

The limiting factors, of course, are the airports themselves; as you spoke of, the 22 pacing airports. I think that the system is managed right now on an hourly basis by flow control. The airlines may not be liking it very well, and I'm getting complaints from people, but it is maintaining the safety of the system.

Mr. LEVITAS. What about slots?

Admiral ENGEN. I would prefer that the airlines worked that out themselves if they can. That's my personal desire.

Mr. LEVITAS. Mr. Molinari has pointed out yesterday, and we certainly concur, that when you are scheduled—if you look at the Official Airline Guide—19 flights within a two-minute period at Hartsfield Airport, it is not only not going to happen; you are lying to the public. When I say "you," I do not mean you. I mean whoever is doing that.

You have contended vigorously that the capacity of airports to handle traffic is a limiting factor. You heard . . . the controller in the Atlanta Center quote what his facility manager said: "We can't take any more traffic. We can't take any more in the system."

Leesburg controllers said there is no elasticity left; that the peaks are not being followed by valleys, and the peaks are getting closer and closer together. Aren't you going to have to either expand the capacity of the system or put restrictions on?

Admiral ENGEN. Yes, sir. And I am working to expand the capacity of the system. . . . At this point in time, I would maintain, sir, that we are safely monitoring the traffic at this time. It may be right about here, and we may tomorrow have to make some accommodation to that, but right now it is in fact being monitored properly.

It's a problem, and that's creating my labor problem, if you will. It's the perception out there that they are overworked, overburdened, and they are. And I'm trying to work back to where that is no longer the case. We're hanging in there right now.

Mr. LEVITAS. That is what worries me. I think it is sort of hanging in there by a fingernail almost, and that we do not realize that there is going to be more demand on the system.

ENOUGH CONTROLLERS?

Has the experience level and size of the controller work force increased sufficiently since the 1981 strike to meet traffic demands, without overworking controllers and without risking the safety of the system? This is one of the key questions concerning the recovery of the Air Traffic Control system since the strike.

Number of controllers in major ARTCCs and TRACONs

Tables 1, 2, and 3 show pre- and post-strike figures for the number of controllers and traffic handled by controllers in the Indianapolis, Atlanta, New York, Cleveland, Los Angeles, and Chicago Centers as well as TRACONs in Los Angeles, New York, Atlanta, and Chicago. These data were provided by the respective facility managers in the subcommittee's March 1984 hearings. Most managers provided pre-strike data for July 1981 and post-strike data for January 1984. This available time interval likely understates the post-strike traffic volume compared to pre-strike, since in the winter (January post-strike) traffic is typically lower than in the summer vacation period (July pre-strike).

Table 1 shows, post-strike, that all facilities had both fewer controllers and fewer experienced controllers (FPLs), compared to pre-strike. In the six major ARTCCs, there were only 61% as many controllers post-strike as pre-strike, and only 43% as many FPLs. In the TRACONs, there were 74% as many controllers and 52% as many FPLs.

TABLE 1.—NUMBER OF FPLs AND CONTROLLERS, PRE- AND POST-STRIKE

Facility	Pre-strike			Post-strike			Post-strike as percent of pre-strike	
	Number of FPLs	Number of Controllers	FPLs/ Controllers, percent	Number of FPLs	Number of Controllers	FPLs/ controllers, percent	FPLs	Controllers
ARTCCs:								
Indianapolis	282	398	71.0	118	209	56	42	53
Atlanta	394	395	99.7	194	326	60	49	83
New York	337	434	78.0	126	280	45	37	65
Cleveland	400	524	76.0	175	297	59	44	57
Los Angeles	214	330	65.0	123	232	53	57	70
Chicago	338	491	69.0	135	230	59	40	47
All 6 centers	1,965	2,572	76.0	851	1,571	54	43	61
TRACONs:								
Los Angeles	35	51	69.0	23	33	70	66	65
New York	121	172	70.0	58	118	49	48	69
Atlanta	99	102	97.0	54	81	67	55	79
Chicago	77	100	77.0	38	81	47	49	81
All 4 TRACONs	332	425	78.0	173	313	55	52	74

To be meaningful, the number of controllers needs to be related to the volume of traffic handled. Table 2 shows that traffic overall

decreased slightly for the six ARTCCs (post-strike 95% of pre-strike). Traffic increased appreciably for the New York and Atlanta ARTCCs. Atlanta's increase was due, in part, to the reassignment of airspace since the strike. Traffic decreased most of the Indianapolis and Chicago ARTCCs (88% and 74% of pre-strike levels, respectively), but for both, the decrease is, in some part, the result of airspace reassignment to other ARTCCs. For the TRACONs, the appreciable increase in traffic for New York more than offset slight decreases for Los Angeles, Atlanta, and Chicago. Again, it should be noted that the post-strike situation is probably understated due to the typically lower-winter-than-summer traffic levels.

TABLE 2.—AVERAGE MONTHLY VOLUME OF TRAFFIC, PRE- AND POST-STRIKE

Facility	Number of aircraft		Post-strike as percent of pre-strike
	Pre-strike	Post-strike	
ARTCCs:			
Indianapolis	129,175	114,164	88
Atlanta	147,110	164,279	112
New York	129,000	147,000	114
Cleveland	170,749	159,311	93
Los Angeles	118,831	117,345	99
Chicago	195,227	145,191	74
All 6 centers	890,092	847,290	95
TRACONs:			
Los Angeles	49,000	45,500	93
New York	101,512	129,000	127
Atlanta	70,090	65,998	94
Chicago	80,764	74,467	92
All 4 TRACONs	301,366	314,965	105

Table 3 is derived from Tables 1 and 2 to show what has happened to the average volume of traffic handled by each controller—and each FPL—since the strike. In all facilities, both ARTCCs and TRACONs, the average monthly volume of traffic per controller and per FPL has increased, and increased appreciably.

Overall, the average traffic per FPL in these six ARTCCs more than doubled--a 113% increase—from pre-strike to post-strike. The traffic per controller increased at about half this rate—by 56%—in these ARTCCs. The New York ARTCC had the greatest increases—a 205% increase in traffic per FPL and a 77% increase per controller.

Likewise, New York led the TRACONS in increases—165% for FPLs and 85% for controllers. For all four TRACONs, the traffic per FPL increased by 85% and per controller by 38%.

TABLE 3.—AVERAGE MONTHLY VOLUME OF TRAFFIC PER CONTROLLER PRE- AND POST-STRIKE

Facility	Monthly traffic per controller					
	Number of aircraft				Percent increase/pre- to post-	
	Pre-strike		Post-strike			
	FPL	Controller	FPL	Controller	FPL	Controller
ARTCCs:						
Indianapolis	458	325	967	546	111	68
Atlanta	373	372	847	504	127	35
New York	383	297	1,167	525	205	77
Cleveland	427	327	910	536	113	64
Los Angeles	555	360	954	506	72	41
Chicago	578	398	1,075	631	86	59
All 6 centers	453	346	996	539	113	56
TRACONs						
Los Angeles	1,400	960	1,978	1,379	41	44
New York	839	590	2,224	1,093	165	85
Atlanta	708	687	1,222	815	73	19
Chicago	1,049	808	1,960	919	87	14
All 4 TRACONs	908	709	1,821	1,006	85	38

SYSTEM NUMBERS

Data presented at the hearings for system-wide controller numbers were somewhat sketchy. Even so, "ballpark" figures are important, since they provide relative magnitudes for the pre-strike versus post-strike situations.

Testimony provided the following estimates of post-strike controller numbers for comparison with FAA controller goals:

Witness and date of testimony	Number of controllers	
	Goal as designated	Status at that time
Mr. Helms, FAA Administrator, May 4, 1983	14,141	
Mr. O'Hara, subcommittee staff director and counsel, Oct. 28, 1983		13,491
Mr. Fenello, FAA Acting Administrator, Mar. 29, 1984	[1] 14,000	13,274
Admiral Engen, FAA Administrator, June 27, 1984	14,300	13,305
Mr. Van Vuren, Associate Administrator, Air Traffic Service, June 27, 1984	14,305	13,346

[1] Rounded.

These numbers generally indicate that FAA was about 1,000 controllers short of its goal of approximately 14,300 controllers in June 1984. It also appears that the number of controllers (about 13,300) was about 3,000 short of the pre-strike level of 16,250 controllers (see table below).

The mix of experienced personnel working as controllers post-strike has changed appreciably from the pre-strike mix as shown below:

	FPL's		Developmentals		Total
	Number	Percent of total	Number	Percent of total	Number
Pre-strike special investigation report, Air Traffic Control system, NTSB, December 1981, table 1.....	13,311	82	2,939	18	16,250
Post-strike FAA testimony from June 27, 1984 hearing..	6,331	47	7,015	53	13,346

The post-strike numbers are approximations since FAA had stopped using the FPL designation during the latter stages of the hearings. However, in overall magnitude, it is apparent that the experience represented by the high percentage of FPLs pre-strike (82%) has not been replaced; since the number of FPLs in June of 1984 (6,331) was less than half the pre-strike number (13,311).

Testimony indicated that FAA has not been making appreciable progress with increasing its controller work force experience level. Mr. Van Vuren testified on June 27, 1984 that "We have recently experienced some unexpected—personnel—losses in the training area." This was supported by an FAA memorandum which stated that "An insufficient percentage of those hired—51%—have reached FPL status." On April 4, 1984, Mr. Van Vuren testified that "We had 2,274 people that are eligible for retirement, but 'that doesn't mean they are going to retire.' " The number eligible for retirement is about one-third the total number of FPLs shown in the table above (assuming those eligible for retirement are FPLs). Chairman Levitas indicated in his questioning of FAA that the number of FPLs as a percentage of controllers (in the Denver ARTCC) actually dropped slightly from 48% in September 1983 to 47% in June 1984.

IS FAA'S GOAL FOR CONTROLLERS REALISTIC?

During the hearings, FAA Administrators typically testified as to FAA's progress toward meeting its goal of about 14,300 controllers. For example, Admiral Engen reported in June 1984 that: "In September—1984—I will be just 690 people short of our goal and in February—1985—I plan to be at the goal." This gives the impression that FAA is on schedule in getting the controller work force back to normal after the strike. It is consistent with the time frame used by his predecessor, Mr. Helms, who testified in October 1983: "I will feel much better a year and a half from now" when the controller work force goal has been achieved.

But there are flaws in this approach, including the following factors which are not reflected by the 14,300 controller goal:

—The number of experienced controllers has declined by about one-half and that experience loss will not be replaced for years to come. The experience level of controllers is not represented at all in FAA's goal. Its importance is discussed in the following subsection.

—In October 1983, there were about 3,000 supervisors working the "boards." FAA has made no commitment to return them to their supervisory positions full-time. As long as supervisors are working regularly as controllers, the subcommittee does not believe that FAA has a sufficient number of controllers.

—Throughout the hearings, testimony of controller overwork was received (as shown in the preceding section) indicating that the controller work force is not as close to its goal as FAA indicates.

—Traffic volume has been increasing and flight scheduling has been peaking at major airports—neither of these very important traffic load factors appears to be represented in the overall controller goal.

The controller work force cannot be considered to be fully recovered until these very important factors are incorporated into the goals set for the controller work force, and until such more realistic goals are, in turn, met. Under more realistic goals, it will take much longer to rebuild the work force than FAA has planned. From the standpoint of controller experience alone, it will likely take several more years to build controller experience back to near pre-strike levels.

THE NEED FOR EXPERIENCED CONTROLLERS

Witnesses were unanimous in the belief that more experienced controllers are important to the effective functioning of the system; the following are illustrative:

> Mr. ROWLAND. Do you think that the system could be improved by having additional active traffic controllers?
>
> Mr. HELMS. (FAA Administrator) If we had fully qualified full performance level controllers, yes, we would be better off. If nothing else, we would go back to the normal overtime we had pre-strike. (10/28/83)
>
> Mr. BACON. (Facility Manager, Chicago) . . . you have to control the numbers of people with certification that you can let out of the building at any one time.
>
> Mr. LEVITAS. Mr. Bacon, you've said it better than I have ever said it and I've been trying to say it for the last number of months. Simply talking in terms of numbers when you are talking about running the air control system, doesn't give you the answer. You've got to be talking about certified, seasoned people to do the job.
>
> Mr. BACON. Yes, sir. (3/21/84)
>
> Mr. MCGUIRK. (Controller, Washington Center) In addition to that, we have been in constant training situations where you are unaware of the experience level of the controllers in the adjacent sectors, oftentimes all the sectors which surround yours have trainees or partially qualified controllers.
>
> So it has become such that immediately upon plugging into a sector, you put out your defense barriers, you watch all the sectors around you . . . because you never know what the [developmental] controller . . . is going to give you next. That is our concern. (10/28/83)
>
> Mr. LEVITAS. We also recognize that the experience level of the controllers or the availability of seasoned controllers may not be adequate for the amount of traffic being permitted to move throughout the Nation, and that is very critical, because it is going to be experience that is going to

be the deciding factor when the unexpected emergency occurs—the loss of an engine or the sudden development of severe weather fronts. (10/28/83)

Mr. LEVITAS. Do you have enough certified experienced controllers to handle the amount of traffic that's in the system now, and particularly in peaks and high traffic areas and bad weather?

Mr. VAN VUREN. (Associate Administrator, Air Traffic Service, FAA) In certified controllers, no, we don't have enough, okay. But we do have a supplement, which is the supervisors and staff people that are still there, that provide us with adequate controllers to provide, accommodate those peaks. (6/27/84)

Mr. BURNETT. (Chairman, National Transportation Safety Board) The controllers who are presently working have, and I don't believe I will have any disagreement on this, have not had the experience in working the peak traffic loads that were characteristic of the system prior to the strike.

Those peak traffic loads often resulted in complicated holding patterns. The controllers that are now working had very little experience in handling those sorts of situations. Personally, I hope they never get much experience in handling complicated holding patterns because I hope we never permit that sort of thing to develop again.

But it would be a matter of very great concern if controllers who have had little or no experience in handling that sort of thing were all of a sudden faced with the necessity to do so frequently. (6/7/83)

Thus, at the time of our hearing, the number of controllers—and particularly, the number of experienced controllers—remained below the level needed to run the system effectively. Compared to pre-strike, six major ARTCCs had only 43 percent as many experienced controllers (and 61% as many total controllers) handling 95 percent of the pre-strike traffic volumes. Overall, the system was about 1,000 controllers short of FAA's goal and about 3,000 short of the pre-strike level; however, about 3,000 supervisors were still working as controllers. Systemwide, FPLs were only 47 percent of the total controller work force post-strike compared to 82 percent pre-strike. FAA's goal for a fully staffed controller force fails to reflect some very important factors, particularly the level of controller experience. Witnesses believed that more experienced controllers were needed for the safe and effective operation of the system.

MARGIN OF SAFETY

FAA has the responsibility for assuring aviation safety and for taking corrective action when an adequate margin of safety is not achieved. NTSB has the related authority for investigating the causes of accidents and for monitoring aviation safety. Chairman Levitas expressed the subcommittee's concern for safety in his October 1983 opening statement:

Some of the reports we have heard suggest that the efforts to restore traffic to prior levels may be premature, and we need to develop testimony from the people who are on the front lines to discover whether or not we have an accident out there somewhere looking for a place to happen.

MEASUREMENT AND REPORTING

The complex systems and procedures that measure and report the safety margins for air traffic control are introduced in this section. NTSB reports that accidents are a poor way of measuring safety since they represent the final results of an unsafe system. The margin of safety should be determined, and any safety problems resolved, before, and not after, accidents occur. This position is consistent with Chairman Levitas' opening statement in June 1983: "I believe it is important that we establish some [safety] barometer by which we can measure what is actually taking place in this Nation's airspace."

In its May 1983 Special Investigation Report, *Followup Study of the United States Air Traffic Control System,* NTSB presents the following classifications of unsafe practices and procedures: operational errors, operational deviations, pilot deviations, near midair collisions, and aircraft accidents and incidents. Operational *errors* occur when there is less than minimum separation between two aircraft, or between an aircraft and terrain or obstacles. An operational *deviation* occurs when an aircraft fails to achieve the required separation with protected airspace (such as an area restricted to military aircraft). A pilot deviation happens when a pilot fails to comply with Federal Aviation Regulations, including those which govern the ATC system. Near midair collisions are collision hazards reported by aircraft crew to air traffic control personnel.

An operational error is the most applicable of these measures as an advanced warning to the ATC system. Mr. Galipault, Aviation Safety Institute President, testified that computers, in conjunction with radar, generate conflict alerts as advanced warnings of potential operational errors in the ATC system as follows: An aircraft is assumed to be at the center of a cylinder—likened to a hockey puck—which has a diameter of either three or five miles and a thickness of either 1,000 or 2,000 feet. (See below for cases defining these dimensions.) The computer tracks the projected movement of an aircraft's cylinder, and when the cylinder is projected to touch the boundary of another aircraft's (or object's) cylinder, a conflict alert is visually displayed on the controller's screen. Such alerts usually provide the controller with sufficient time to change the direction or altitude of the aircraft involved in order to avoid an operational error. General cases that define the dimensions of the aircraft's airspace boundaries—i.e. dimensions of the hockey puck—are:

Aircraft altitude	Dimensions of puck
Altitudes below 18,000 feet, and within 40 nautical miles of radar antenna.	3 nautical miles diameter 1,000 feet thick.
Altitudes above 18,000 feet, below 29,000 feet	5 nautical miles diameter 1,000 feet thick.
Altitudes above 29,000 feet	5 nautical miles diameter 2,000 feet thick.

FAA's Quality Assurance Program (QAP) was developed to provide systematic identification of operational errors. FAA has always required that operational errors be reported; previously it was the responsibility of the controllers and first-line supervisors to identify and report such errors. With the Quality Assurance Program, the computer is supposed to automatically print operational errors at the "watch desk." Then an area supervisor determines whether an operational error may have occurred and, if so, an evaluation team is formed to investigate. Thus, in concept, QAP partially substitutes computer technology for human judgment in identifying operational errors. This program was being implemented during these hearings and problems were occurring, as will be described later.

A limitation of the operational error measure was that a small infringement—say, a 4.8-mile separation when a 5 mile separation was required—was counted in the same way as a major infringement of, say, only ½ mile. To address this limitation, FAA initiated a program to better classify the severity of separation infringement as minor, moderate, major, and unknown. These categories are defined by a point system in the following case of 5-mile, 1,000-feet separation:

Category	*Points*
Major infringement	20
Moderate infringement	14-19
Minor infringement	1-13
Unknown	Unknown
Points are determined as follows:	
Horizontal Proximity:	
Less than ½ mile	10
½-1 mile	9
1-1½ miles	8
1½-2 miles	7
2-2½ miles	6
2½-3 miles	5
3-3½ miles	4
3½-4 miles	3
4-4½ miles	2
4½-5 miles	1
Vertical proximity	
Less than 500 feet	10
500-600	9
600-700	8
700-800	6
800-900	7
900-1000	2

Hypothetical example of using above categories: If the computer printout of an operational error shows a separation of 4.2 miles (horizontal) and 820 feet (vertical), this table assigns points of *2* (4-4½ miles horizontal) + *4* (800-900 ft. vertical) = *6;* thus a minor infringement of separation occurred since minor is defined as 1-13 points. Note that a major infringement occurs only when the top point value is achieved in both the vertical and horizontal categories (less than ½ mile horizontal, less than 500 ft. vertical).

IMPACT OF STRIKE ON SAFETY

To measure any change in aviation safety as a result of the 1981 strike, NTSB analyzed data from the following sources:

FAA—operational errors, operational deviations, pilot deviations, near midair collisions;

NASA—operational errors, near midair collisions;

NTSB--accident/incident records analyzed for ATC system failures;

Air Line Pilots Association—operational errors;

Aviation Safety Institute—operational errors, conflict alerts.

In its May 1983 follow-up report on the ATC system, NTSB found a significant reduction in operational errors after the strike, even after accounting for reduced flights. NTSB's analysis of FAA data showed a 34.9 percent reduction in errors at en route centers and a 44.5 percent reduction at terminals (operational error rate per million operations). NTSB also cited an FAA-contracted study which concluded that there were fewer post-strike operational errors.

However, NTSB believes that these results are *not conclusive* since "the unknown extent of unreported errors . . . makes firm conclusions impossible." NTSB found that "numerous unreported operational errors and operational deviations are occurring daily in the ATC facility operations." NTSB uncovered these unreported errors through personal interviews with controllers, data from an anonymous questionaire to controllers and supervisors, and a computer analysis that was used to check out conflict alerts for unreported operational errors.

In another report provided for the hearings record, the Aviation Safety Institute analyzed conflict alert data for one pre-strike day (July 1981), four early-strike days (August 1981) and three post-strike days (August 1982) at the Chicago, Cleveland, Oakland, and Washington Centers. The ASI study found no statistical differences between the number of conflict alerts immediately before the strike versus immediately after the strike. However, the ASI analysis found that the number of conflict alerts approximately doubled from August 1981 to August 1982 as the traffic picked up by about 15 to 20 percent across these four centers. This supports "the—study—hypothesis that the National Airspace System had a reduced level of safety as—it—was slowly brought to a higher level of traffic activity." Mr. Galipault of ASI testified, however, that the study "is inconclusive because we feel we don't have enough data."

Numerous incidents of system errors and near-collisions have occurred since the strike. Although these cannot be attributed directly to the post-strike situation, they are indicators of margin-of-safety problems in the ATC system. The following are post-strike incidents presented at the hearings and in documents provided for the record:

> Mr. Molinari, Ranking Minority Member, May 1983.
>
> Our subcommittee . . . is going to be investigating a matter that occurred at one of the major airports where the supervisor took a coffee break, and while on a coffee break there were two relatively new controllers . . . who acted independently of each other in bringing in two planes. There was a vertical separation . . . of about 100

feet instead of the 1,000-foot minimum. This is when the supervisor was out on a coffee break, and we had the potential for a disaster there. So the fact that we have supervisors somewhere does not really satisfy the problem.

Followup Study of the United States Air Traffic Control System, National Transportation Safety Board, May 12, 1983.

Conflict Alert Analyses.—The Safety Board investigators reviewed radar facility conflict alert computer records during the facility surveys to detect possible less-than-standard separation incidents. The Board's investigators requested computer searches of aircraft data for random periods in which conflict alerts had alarmed. The majority of alerts were routine alarms . . . and did not indicate actual operational errors or pilot deviations. The investigators plotted the separation distances for each conflict alert which suggested a separation problem, and where less than prescribed separation [existed] voice tapes were examined, if available, to evaluate the circumstances.

Using [this method], the Board's investigators found several unreported operational errors. . . . A few of these errors or deviations were clearly caused by controller error, while others were . . . either controller errors or pilot errors. . . . *No record could be found of an FAA report or investigation of these occurrences.* . . .

At a level-five terminal radar facility, the Board's investigators examined computer data for conflict alerts in the final approach airspace where aircraft were being vectored to parallel runways in visual meteorological conditions. . . . A review of voice tapes revealed that standard criteria were compromised on numerous occasions, yet no report or investigation was evident. . . .

In another case examined by the investigators, a Piper Cheyenne departed the Omaha, Nebraska Airport, en route to the Minneapolis-St. Paul International Airport . . . While cruising inbound, at 7,000 feet . . . the Cheyenne passed in front of a Seneca at a minimum separation of ¾ nautical mile . . . The Seneca also triggered a conflict alert with a third aircraft. . . . Moreover, right after the minimum separation incident involving the Seneca, the Cheyenne initiated a conflict alert with a fourth airplane. . . .

A data run received from the Minneapolis Center indicated that a less-than-standard separation occurred between two airliners . . . while on . . . final approach course at the Minneapolis-St. Paul International Airport . . .

Conflict alert data were received from the Cleveland Center on November 29, 1982, and five situations were examined by Safety Board investigators. The data supplied indicated an incident involving a possible separation of 1 mile between two air-liners . . . approximately 20 miles from the Pittsburgh Airport. . . .

During the Safety Board's investigation and in its report of the Air Florida, Inc., Boeing 737 accident at Washington, D.C., . . . the Board concluded that the local controller erred in judgment and violated ATC procedures when he cleared a flight with less than required separation. The controller's overeagerness to expedite traffic flow resulted in actions contrary to established procedures and jeopardized safety. The Safety Board expressed its concern that no operational error was recorded, although the controller's handling of traffic in that case was clearly contrary to FAA procedure.

Mr. Galipault, Aviation Safety Institute, October 1983

We also note, and we have since the strike, an impressive number of losses of separation, particularly in terminal areas . . .

There are very strict rules published for the controllers that they must maintain this minimum separation, at least the minimum separation. We see this being violated very frequently. We have reports of it. We get them almost daily from the Los Angeles area. But what is more dramatic is that we see an awful lot of what we call go-arounds, where aircraft on short final approach within almost the airport boundary are forced to make a go-around because of a loss of separation that is very dramatic, very significant, where if they did not go around, it would be possible that the aircraft could collide or get very close together . . .

We have real concern that system errors are occurring because of the increased use of developmental controllers where they are forced to work independently and, in many cases, even though they are not supposed to be there independently.

I will give you an example of one that happened to me recently on a departure in the evening from White Plains, NY, Airport, Westchester County. I departed to the southeast on an instrument flight plan, executing the Westchester 3 departure, which is standard.

I was immediately handed off to the departure controller at the New York TRACON. I gave him my call sign and he told me to begin an immediate, rapid descent from 6,500 feet. I didn't have a chance to tell him anything, but that I was at 1,100 feet climbing.

He said, "Please be quiet, I don't want you to talk." That is the first time that has happened to me in an awfully long time. It is an indication of a problem. . . .

Now, there have been specific instances where there have been cover-ups. In fact, one was very well described, I believe it was in both the Chicago Tribune and the Minneapolis Star Tribune and that dealt with an incident, as I recall, in March 1982 involving a TWA and a Northwest jet over Lake Michigan. It was brought up in the newspaper that the FAA admitted that they had covered it up. Now, whether or not the FAA region covered it up or the

public relations person covered it up, the important thing is that it was covered up.

To give you another example, this summer we had three separate but almost identical reports from controllers at the Minneapolis TRACON. We were told that a situation occurred on July 14, 1983, in which an American Airline jet, and I believe a United jet, were nose to nose. Literally they were facing each other at the outer marker for one of the approaches with less than 400 foot separation. We immediately requested the data through the Freedom of Information Act. We are still negotiating to get that data. I was informed later that the "deal" did not occur on July 14, it occurred 7 days earlier. And I was also told that in conversation, some people high up in that facility were overheard to say, "Well, we fixed Galipault's ass!"

Captain Duffy, President, Air Line Pilots Association, June 1984.

One incident of note is the near midair collision between the two wide-body aircraft off the coast of Florida; the NTSB analysis of this near-tragedy revealed that even though experienced controllers were working these aircraft, their performance was impaired by fatigue resulting from overwork due to inadequate staffing in the facility.

Another incident involved three aircraft being cleared to the same altitude in the same holding pattern near Chicago, O'Hare. In this case, the relatively new controller was apparently working too many airplanes for his level of training and experience.

In another incident a KLM–747 was assigned a course reversal when a New York controller was unable to effect a radar handoff to an adjacent Washington sector. The jumbo intruded into the flight paths of three oncoming airplanes. Here is a case of too many airplanes in too little airspace.

Perceptions of quality assurance

The hearings elicited a wide array of perceptions on FAA's Quality Assurance Program, which was being implemented on a facility-by-facility basis at this time. QAP was being faulted for several reasons by such diverse groups as NTSB, ALPA, ASI, and the controllers themselves.

Mr. Helms' strong backing of QAP was apparent. He testified that he came to government from industry where quality control was an important part of doing business and he felt that assuring quality was also very important in government. With QAP, Mr. Helms testified, "We are going to be able to significantly improve the identification of operational errors, and the ability to see whether that operational error was a dangerous one." He stated that "The whole intent of the program is to introduce quality control into the job performance of the individual controller."

He stated further that under QAP the computer would print an operational error at the watch supervisor's desk, but that a "supervisor who is not part of that watch group . . . looks at it and he makes a first determination that, yes, there was an operational

error. . . . At that point others are brought in and we start an evaluation team and do not let the local supervision do it." The whole process of forming an evaluation team from other facilities and reviewing the potential operational error would take several weeks.

What happens to the controller if the system error charge sticks? If the evaluation team rules that there has been an error, Mr. Helms testified:

> We sit down with the employee. He is given immunity for that event. We go through it with him to show him how and why. . . . So he has immunity, then, the first incident. If he has another of the same type, he will get a warning, and then he will get disciplinary action. If he has one of another type, he may get immunity for that one, it depends on the nature of it. After that, he will get disciplinary action, because we just can't have a system where he continues to get immunity.

The Quality Assurance Program began in April 1981, but was put aside following the strike. It was started again in July 1983 in Salt Lake City, followed by Jacksonville, Florida. Mr. Helms testified in 1983 that this "program will be under way through our entire system late next spring."

These, then, are the general dimensions of QAP as presented by Administrator Helms in the early days of our hearings. Following are some of the reactions and critical comments that this program elicited at subsequent hearings.

Derogatory references to QAP

The program has been labeled "squeal-a-deal" and "snitch." "Squeal" is the alert that signifies an error, and "deal" is the loss of separation itself. Anthony Skirlick, a Los Angeles controller, testified that "squeal-a-deal" was not the term that controllers developed; it was the term employed by FAA's quality assurance staff during training. It was presented in a joking manner: "The first day 50 percent of you will probably have a deal when we turn this on"; the other 50 percent will have one the next day; after that everybody will be at the map table "figuring out all their deals." Four Human Relations Committee representatives were asked if they had heard the term "squeal-a-deal" referring to QAP—all four had. Several witnesses indicated that the computer used in the program was called the "snitch" or "snitch machine." Such derogatory and joking comments undermined the serious purpose of QAP in the eyes of controllers and other users.

SUPPRESSION OF ERRORS

Several controllers testified that they had figured out a way to override the quality assurance alarm prior to its activating. Such an override would, to the extent practiced, defeat the principal purpose of the Quality Assurance Program—impartial and automatic reporting of operational errors.

Controller Anthony Skirlick testified that subjective judgement is still possible under QAP, since facility personnel have to inter-

pret and investigate the causes of computer alarms. If incentives existed to suppress errors before quality assurance, they still exist. The potential is there—despite management admonishments—for facility personnel to suppress system errors, or to subjectively interpret what constitutes a system error.

A USEFUL TOOL FOR PUNISHING CONTROLLERS?

Several witnesses indicated that the Quality Assurance Program was placing too much emphasis on punishing controllers and too little emphasis on objective identification and reporting of operational errors for the system.

Mr. Galipault of ASI expressed his concern with using QAP to punish controllers as follows:

> It is not a good idea in my opinion to use this as a grading system for measuring controller performance, because even in its best mode, it is still subject to some variables, one of which is the pilots of those aircraft. Maybe the controller did everything he was supposed to do but maybe they were flying at the wrong air speed at the wrong heading, it could be any number of things. Maybe within that sector or sectors of that center or the adjacent centers there are inherent procedural problems that each time those conditions exist, you get this kind of conflict alert. Maybe it is not the controller at all. Maybe it is the procedure. So I think we have to be extremely careful about this.
>
> The reason I am concerned about it being used as a tool is that it is a demoralizing thing for those people who are basically trying to do the best job they can, and I think that is the wrong way to approach the human frailty, in other words, the commission of errors.

Captain Duffy and Mr. Howell of ALPA, had somewhat different reasons for being concerned about the punitive impacts of quality assurance:

> Mr. HOWELL. . . . The primary emphasis of the Quality Assurance Program . . . is to identify and to remedy controller deficiencies. But I think what is happening is a development toward a more punitive approach to that problem rather than a corrective attitude, and it is that approach which we find most offensive and most like the attitudes which preceded the strike of 1981. That is the course of action we hope to change with the new Administrator, and with the change we hope to make the ATC system grow.
>
> Mr. DUFFY. I would just add to that . . . [in] the Aviation Safety Reporting System that NASA has, what makes that work is an immunity program, and while there are some people that have always been around that said, you know, punishment is the only thing that corrects the system, we have never believed that. We believe openness corrects the system. We have got to know what the problems are, and if people are going to hide the problems fear-

ing punishment, then they are never going to be uncovered.

So in the name of aviation safety we think there should be immunity attached to the Quality Assurance Program for the controllers and of course we think for the pilots as well.

Mr. Burnett, Chairman of NTSB, expressed essentially the same concern as ALPA, in the following testimony:

> . . . I think that our study has established that there are many errors not being reported. . . .
>
> We think that the institution and process the FAA has for reporting errors may mitigate against effective and complete reporting. We think it would be much better for them to put the emphasis on the diagnosis and correction of problems rather than discipline or punitive measures, and give some protection to controllers who forthrightly make some reports so that they can have a better judgment about the problems that have developed without the controllers—by having frankly reported the problems—being threatened with some kind of disciplinary action.

NTSB's study was conducted when the previous quality assurance program was in effect and controllers and supervisors were responsible for self-reporting of errors. However, NTSB's concern with punitive impacts are still pertinent to the new Quality Assurance Program since it still provides for punishment and the corresponding disincentives to report operational errors.

The controllers themselves were confused as to whether the program's principal intent was (1) to assure quality in air traffic control services, or (2) to mete out penalties to controllers based on operational errors uncovered by the system. Mr. Azzarone, a New York Center controller and Human Relations Committee Chairman, examined this question so he could inform controllers at his facility. He discussed these competing objectives with ATC personnel throughout the country; instead of clarifying the issue, he came away confused because of the varying perceptions that he encountered.

FAA Administrator Engen responded to some of these negative comments about QAP punishment as follows:

> Four controllers have received written warnings in the major category of these errors. And in each case these controllers have been repeat offenders. To set that in the proper context, I would just like to say at this point in time that the percentage breakout in our operational errors is roughly this: Eighty-nine percent of all the operational errors are minor in nature. Ten percent are moderate in nature, and 1 percent are major.
>
> We also use this information from operational errors to improve our procedures and controller training, again, to continue to make our system more efficient and even safer. The FAA responded to the concern expressed by this subcommittee and others about the potential for failing to

report operational errors by developing a reliable system for detecting and reporting these errors.

Other QAP issues

Other quality assurance issues were raised in the hearings.

ALPA was concerned about the delayed reporting of errors. The controller does not always learn of the computer report of an operational error at the time it happens; he may learn of it on a delayed basis when the area supervisor checks out the conflict report. Even worse, the pilot and crew of an aircraft learn of an error by mail long after it happens—maybe two to three weeks. Such delayed information is of little use to them since the situation may have been forgotten, or not even known about. ALPA recommended immediate notification of pilot and crew.

Controllers expressed concern about the accuracy of the quality assurance machine: Can it distinguish between, say, a 4.8 mile separation (an operational error) and a 5.1 mile separation (not an error)? One controller suggested that an aircraft test flight might be used to check the accuracy of this machine.

Controllers indicated that they were using increased separation distances to avoid triggering the machine alert. Instead of a five-mile separation, they were using six or seven miles. ALPA criticized this practice since increased separation distances result in reduced ATC capacity at a time when existing capacity is being taxed.

RECENT EVIDENCE OF A DECLINING MARGIN OF SAFETY

The Air Line Pilots Association represents pilots who are in constant contact with the ATC system on a large-scale basis. As such, ALPA represents the principal users of traffic control services and has ways to assess aviation safety conditions that others do not. ALPA testified in June 1984 that the "margin of safety is growing thin" in recent months as evidenced by a number of indicators and incidents:

> Growing number of aircraft in system—United adding 67 daily flights to Chicago on June 1, 1984, and American adding 49 daily flights to Chicago (May 1–July 2, 1984).
>
> Frequency of public statements by those who run and use the system—controllers concerned with safety and airline management talking about delays and the inability to add more flights.
>
> Increased number of pilot reports, many safety-related.

As evidence of controller overload, Captain Duffy testified:

> Well, one of the things that we see, is when we will check into a frequency and we will call them and say Chicago Center, this is umpty-ump flight and nobody will answer because the controller has obviously just covered over it and doesn't have time. He will get back to us eventually. That has always happened, but the frequency now is alarming. So obviously that controller is just handling too many operations.

> But then, you know, when you talk to these guys it is just like when they know we have got problems up there. You can literally hear the tenor of the voice go up. You can hear the strain in their voices and you can hear anger sometimes.

During the hearings, the subcommittee played a tape of an incident in Los Angeles which further illustrated a declining margin of safety. A DC-10 was cleared for takeoff by a developmental controller, and a KC-10 military aircraft was making a low-level high-speed approach over the airport at about the same time and in the same direction. The developmental controller working in the airport control tower, alerted to this potential conflict by the radar room controller, made the following excited statements: "Aw, shit it's not working out at all"; and, to the radar room controller of the military aircraft, "You gotta do something now." An alternate course of action was worked out and a potential mishap was avoided. The subcommittee and most of the controllers who heard the tape felt that this, indeed, was an unusual situation and one which should have been investigated by the Los Angeles facility—but was not. Mr. Helms and the FAA staff defended the lack of an investigation, contending that this was not an unusual event and that no operational error had occurred.

FAA did not even address the issue of why the departing DC-10 was allowed to take off, knowing that the KC-10 was approaching the airport. Subsequently, the tower controller was promoted. One year later the same controller, while giving on-the-job training to a developmental controller, issued instructions to two aircraft to use the same taxiway at the same time, which resulted in a collision of the two jets. One lost three feet of a wing and the second had severe damage to the leading edge flaps. The subcommittee does not believe additional comment is necessary.

OVERALL SAFETY CONCERN

Chairman Levitas' statement to Administrator Engen at the close of the hearings summarizes the subcommittee's position on the diminishing margin of safety:

> . . . I have heard enough testimony, read enough reports and memoranda in recent weeks and months that talk about narrowing the margin of error, too much traffic, too few controllers and that safety is in jeopardy, not to believe that there is a diminished margin of safety within the system that must be addressed. . . .

It is dismaying to the subcommittee that the FAA has not objectively monitored the safety of the ATC system and regularly reported on its safety status. We believe this should be a prime responsibility of the FAA. It is very difficult for outside organizations such as ALPA, NTSB, and ASI to do this because FAA's data is not complete and is difficult and expensive to obtain. FAA's margin-of-safety data, which is dependent upon the identification and reporting of controller errors, will remain incomplete as long as controllers believe the agency pursues solely a punitive approach to identification and reporting of controller errors.

CONTROLLER STRESS

FAA sponsored a comprehensive occupational study of stress—one of about 28 stress studies since 1970—and found that stress affects the physical and psychological health of many controllers. This conclusion was supported by the research findings and testimony of noted stress authorities.

Despite the findings of its own research, FAA initially contended that being a controller was not uniquely stressful and that stress experts did not exist. Near the end of the subcommittee's hearings, FAA began to acknowledge controller stress and to formulate plans to address its consequences.

ROSE STUDY

The Rose Report, named for Dr. Robert Rose, the principal investigator, concluded a 1972–1978 research study of controller stress by a Boston University staff of over 50, at a cost to FAA of $2.8 million. This study demonstrated that controllers had excessive incidences of high blood pressure—a precursor to cardiovascular problems—and that they had higher than average incidences of psychological/personal problems, including alcohol abuse, chronic depression, and impulsivity.

METHODOLOGY

More than 300 controllers—all men—were selected for the study, and their physical and psychological health was monitored for a three-year period. The controllers were selected from a wide variety of control facilities in the Northeast U.S. The study team measured health changes using comprehensive physical, psychological, and attitudinal tests applied in the Boston University School of Medicine Clinic and in the controllers' working environments.

Dr. J. Stephen Ziegler, Coordinator of Psychological Services at the Georgia Regional Hospital, testified that the Rose Study was methodologically sound and comprehensive. He stated that it "came like a breath of fresh air" after previous FAA stress research, which often involved only a few controllers and which had other limitations. He summarized the Rose Study approach as follows:

> . . . The study included sociodemographic data and an extensive health history on each subject. The controllers were studied on the job and also, free from the work environment, at the Boston University School of Medicine Clinic over the period of three years. New psychological testing instruments such as *The California Psychological Inventory,* the *Sixteen Personality Factor Questionnaire,* the *PSY 130,* and the *Anomie* were used. The *Profile of Mood States* to test the effect the task performance had on the day's initial mood was used on location. In addition, Rose's group devised a *Behavior Rating Scale* to record the controller's rate of task's arousal. Physiological studies, both on location and in the clinic, included cardiovascular and endocrine measures.

The Rose Study measured the controllers' physical condition under actual working conditions at control facilities. Each controller was visited 10 times by a technician: five visits for blood tests that were subsequently analyzed for the presence of two stress-related hormones—Cortisol and Prolactin—and five visits to test for elevated blood pressure associated with stress. The technician also took note of how many aircraft the controller was handling and other circumstances of his job. The test results were later analyzed statistically to determine whether blood pressure and stress hormones correlated with increases in controller activity, thus indicating job-related stress.

FINDINGS

The Rose Study found that the prevalence of high blood pressure in controllers was about 50 percent greater than that of men in the general population. This difference may be even more pronounced than these numbers indicate, since controllers are a select physical group vis-a-vis men in the general population. That is, most controllers who are physically unfit should previously have been screened out through the annual physical examinations required by FAA.

The study also measured the change in hypertension over time. At the start of the study about one-third of the sampled controllers had hypertension, but, at the end, slightly over one-half had hypertension—an increase of over 50 percent in just three years.

Those men who developed hypertension during the study period did not have hypertension when first examined at the Boston University Clinic. Their high blood pressure was detected when they were examined at work in the control facility. These controllers continued to be hypertensive one-to-two years later when examined at the clinic. Thus, high blood pressure on the job preceded high blood pressure at the clinic.

Statistical analysis found that high blood pressure on the job was the *best* of several predictors of subsequent hypertension at the clinic. The analysis also found that controller blood pressure increased correspondingly with the volume and complexity of air traffic. These findings strongly imply that the air traffic control job has stressful effects for controllers. These effects can be quite serious, since hypertension often precedes several acute cardiovascular diseases, according to the testimony of stress authorities.

Dr. Rose concluded his assessment of hypertension among controllers as follows: "We are convinced that work is a contributing factor—to hypertension—and that is why . . . we rated hypertension as the greatest single health hazard of working as an air traffic controller."

The Rose Study also found psychological problems among controllers that appeared to be related, in part, to the job and the environment in which air traffic controllers spend their duty time. The most important were, in Dr. Rose's words, "problems of impulse control." He testified that some controllers "got in fights a lot, were angry, were arrested for minor incidents, had multiple traffic violations, got in trouble with the law, abused recreational

drugs and so on." Thirty percent of the controllers in this study were classified as having "significant impulse problems."

A second psychological problem identified by the Rose Study was chronic depression. Dr. Rose testified that depressed controllers were "people really very down much of the time"—representing between five and six percent of the controllers studied.

A third problem found was alcohol abuse. Over 50 percent of the controllers were classified in the study as heavy drinkers. In the general adult population, about 25 to 30 percent abstain from alcohol; among controllers, only four to five percent abstain.

Rose found that 17 percent of the controllers in the study—about 50 men—had psychological problems in all three areas. He testified that "These were men . . . whose lives were not very happy and were at war with themselves and their environment."

How do these problems relate to the controller and his work environment? Dr. Rose testified that "Controllers are very negativistic about themselves as well as about the agency. They operate in a very alienated mode. That's one of their major problems." He said that he must have heard the following stated a hundred times by controllers: "Doc, it's not the job, it's the system." Rose found that some of "the psychiatric and drinking problems stem very clearly from—this—general attitude of the controllers." He testified that if one "could change the perception of the controller that the agency was an ally and not an enemy, then one could begin to deal with some of the specific problems unique to controllers." He elaborated upon this as follows:" . . . I think one of the problems is their particular way of dealing with things, of coping with stress. Their alienation leads them to be more impulsive, to drink more. And that could be, I think, turned around."

RECOMMENDATIONS

Rose had a number of specific recommendations relating to hypertension. He recommended routine on-the-job monitoring to detect those at risk of becoming hypertensive. For individuals at risk, he recommended techniques such as "biofeedback and meditation/relaxation," to control blood pressure. For those having hypertension, he recommended non-drug therapy, including low-salt diet and moderate exercise, and if these non-drug approaches didn't work, a widely accepted four-step program of medication. He stated that such a program "will nearly always enable the controller to *continue to perform his duties without diminution of efficiency or competence.*"

For psychological problems, Rose recommended "more careful procedures for screening applicants, in order to eliminate in advance those who seem destined to get in the most trouble—particularly the small percentage with extreme impulsivity behavior." For those with psychiatric/psychological problems he recommended "standard professional help routinely offered," *plus* the use of a "widespread network of counseling services—perhaps in-house and including the troubled controller's peers."

"IMPLEMENTATION" OF ROSE REPORT

How did FAA receive and react to this $2.8 million controller health study? Dr. Rose testified that "The agency told us individually and formally . . . that they got their money's worth. It was a well-designed, well-documented, thoughtful and extensive study." Surely, the study results and recommendations are very pertinent to the issue of controller stress, and to actions FAA might take to mitigate stress.

Our investigation and the subcommittee's public hearings found that FAA had not used the Rose Study and its results. It had not even accepted or publicly distributed the executive summary which Dr. Rose subsequently submitted. Dr. Rose testified that the original report in 1978 was long and technical and received little dissemination by FAA. Thus, FAA decided to contract with Dr. Rose and an associate, Albert Rosenfeld, to draft a shorter executive summary of the Rose Study, a task completed in April 1982. Dr. Rose testified about FAA's failure to distribute the executive summary:

> . . . I can't understand, and have great difficulty in comprehending why the executive summary, which was written specifically to be readable and to be understandable, has not enjoyed any dissemination at all. It was written with the purpose of communicating to supervisors, online supervisors, the problems of controllers and difficulties in a way that they could all understand. And I think that has not been done and I am discouraged about that.
>
> I think that the agency has not responded in a way which certainly could be considered maximizing the amount of effort that they went through in terms of expenditure of public funds, let alone our own efforts in doing such a study.

Dr. Stanley Mohler, FAA's technical officer for the Rose Study, had the responsibility for monitoring the study to assure that it was well-conducted and met FAA's needs. Dr. Mohler's testimony sheds some light on why FAA did not utilize the study. Mohler, who had left FAA prior to his testimony, stated that each office in FAA accepted the original Rose Report except the sections affecting them, with which they were unhappy. For example, the medical office "didn't like the concepts relating to stress," and some in that office "denied that there was such a phenomenon as stress." In fact, the medical scientists at the Civil Aeromedical Institute in Oklahoma City "were ordered to delete the word from their manuscripts for a period, which I thought was kind of interesting."

Dr. Mohler further testified that his job was to try to get a memorandum from every office approving the original Rose Report, but that he failed in this because "they just wouldn't concur with those parts that were uncomplimentary to them." Finally, when a formal meeting was held with the Administrator, the FAA directors who felt that the report had been uncomplimentary weren't supportive. The Administrator thus "drew the conclusion that this [report] was not really something that he should pay much attention to."

Dr. Rose and the FAA both provided insight as to why the 1982 executive summary was "tabled." Dr. Rose referred to discussions with Dr. Reighard, Federal Air Surgeon, following which Dr. Rose modified the report in order to get it published. Modifications included deleting references to the controller stress resulting from near-collisons. Despite such modifications, Dr. Reighard testified that FAA had no intention of publishing the executive summary. Later, however, he and Mr. Michael Fenello, Acting FAA Administrator, gave several explanations why the summary was not approved and distributed:

> Mr. FENELLO. Well, it was my understanding . . . that the report that was submitted strayed from the facts and began to get into opinions, and, as a matter of fact, I listened to Dr. Rose here the other day and I can understand why the FAA at that time took that position when he began to "Dr. Strangelove" and so forth.
>
> This was not a report of the factual documents. He was now writing a novel around his report in my opinion. And so, we went back to him and said, as I understand it: "Can you give us a summary which bears on the facts that we can use—which is factual and sticks to the facts?" And that is what we were looking for.
>
> Dr. REIGHARD. . . . [We] have a philosophical disagreement as well as a disagreement over the actual content of the condensed report. This philosophical disagreement has to do with the fact that he [Dr. Rose], at the time of the strike, but only then, gave a great deal of credence to the awesome responsibility that controllers have and he testified that that is a factor of stress. . . . It did not appear in his report—in the 900-page report. But reference appeared abundantly in the draft of the condensed report.
>
> And that is only one example of the extent to which the commission's condensed report strayed from the original report.
>
> Mr. LEVITAS. But didn't he also testify last week, Dr. Reighard, that the data to support that conclusion was in the study he did?
>
> Dr. REIGHARD. Oh, okay. It was unclear to me whether the data were there, or whether we went into the data bank that has been preserved and obtained that information from the data bank. He simply referred to "questionnaires," and I'm not sure what that means. But he has been privileged to retain all of the thousands of bits of data that were accumulated in the course of that study. And he alone has access to them.
>
> Mr. LEVITAS. Well, I'll tell the way it comes across. It comes across that the FAA didn't like what he was saying and, therefore, "deep-sixed" the report, the summary.

Despite this negative reaction to the executive summary, Fenello reversed his position the same day (April 4, 1984), apparently in response to subcommittee concern, when he testified:

> The committee, I think is suggesting very strongly . . . and I would tend to agree at this time . . . that the time has come when we can distribute that 105-page document across the agency and get some good out of it in this way.

WHAT STRESS AUTHORITIES SAY

Several leading authorities in the fields of physical and psychological stress testified about issues associated with stress and air traffic control. The witnesses were:

Dr. Robert Karasek, Assistant Professor of Industrial Engineering, Columbia University.—Has researched a large number of occupations in the U.S. and Western Europe, and conducted a recent U.S. study of the relationships between heart disease and job conditions.

Dr. Arthur Sweney, Industrial Psychologist, Wichita State University.—Has studied stress associated with Minuteman and Titan missile crews, who, he testified, "bear some resemblance to air traffic controllers . . . they are asked to carry out jobs involving vigilance, under conditions of isolation, and sometimes under conditions where they are not getting the management support that would make this job most beneficial."

Dr. Robert Eliot, Director of Preventive and Rehabilitative Cardiology, Heart Lung Center, St. Luke's Hospital, Phoenix, Arizona.—Has a 25-year career in academic medicine beginning as a cardiovascular consultant at Cape Kennedy in the field of stress, holds many national and international positions involving study of the effects of stress on the cardiovascular system; a noted consultant to government and industry on the high costs of job stress.

Dr. J. Stephen Ziegler, Coordinator of Psychological Services, Georgia Regional Hospital, Atlanta, Georgia.—Has studied stress affecting the staff of a mental hospital, and has reviewed FAA's stress research conducted over the past 15 years (including the Rose Study).

Dr. Karasek and Dr. Sweney, testifying on March 27, 1984, and Dr. Eliot and Dr. Ziegler, testifying the next day, described how stress affects people on the job and how the effects of stress can be alleviated. This testimony gave further support to the Rose Study findings and recommendations, and also gave credibility to the existence of both stress and stress authorities. In its initial testimony, FAA had refused to acknowledge stress or stress authorities.

RESEARCH RESULTS OF STRESS AUTHORITIES

Dr. Karasek developed a large-scale research approach to estimate the relative effects of stress across occupations. Dr. Eliot developed a method of detecting stress reactions in individuals. Both approaches provide useful assessments of stress.

Dr. Karasek's research showed that two factors increase occupational stress, thus increasing chances of cardiovascular illness: high job demands and low decision control. (Decision control is the worker's ability to make his own decisions and capacity to use several skills.) In Dr. Karasek's view, if an occupation has high job de-

mands it is not necessarily stressful, as long as employees feel that thy have some control and can do things their way. Occupations placing high demands combined with little decision control are most stressful. His research shows that in these stressful occupations the incidence of cardiovascular disease is the greatest. He indicated that this is a "potentially relevant situation for air traffic controllers," but that his research had not yet included controllers as one of the occupations.

Dr. Eliot's research on stress began 20 years ago when he was the cardiovascular consultant at Cape Kennedy. His eight-year study showed that the sudden-death phenomenon observed in young people (the 28-35 year age group) at the Cape was associated with the launching of rockets. Eliot showed that it was the firing of people after each rocket launch and not the firing of rockets that caused stress and associated cardiovascular disease.

Dr. Eliot's research led him to develop tests to identify "Hot Reactors." Hot Reactors are those people who respond to job-related tests by exhibiting excessive high blood pressure, adrenalin, and increased heart rate. Such physiological reactions to stress, if repeated time and again, often result in "cardiovascular disasters," and development of permanent high blood pressure. His research has shown that such persons, once identified, can often learn to cope with stress or can be encouraged to avoid the stressful job or situation.

The subcommittee's stress witnesses believed that stress is a real phenomenon that not only can cause great physical and psychological harm, but also can be detected and treated. They cautioned that people are highly individualistic in their responses to stress, so that what is stressful to one person may not be to another. However, they agreed that the most stressful situations are those designated by Karasek's classification of jobs as high demand/low control. They felt that the air traffic control occupation places a very high demand on controllers, but they needed more specific knowledge of the occupation in order to assess control.

COMMENTS ON FAA RESEARCH

Stress witnesses believed that the Rose Study and other FAA research demonstrated the existence of stress among controllers. Dr. Sweney testified:

> I don't think that there's any question, based on the data—and I've read not only the Rose Report but I've read other reports on air traffic controllers—and it indicates that chemically and by every other objective measure that is available, these people are suffering stress.

Dr. Ziegler, who reviewed 15 years of FAA stress research, testified that:

> . . . I think that research projects that were done within the FAA itself would confirm that there were some physiological indicators of stress, like the secretions in the urine and the blood secretions and the vital signs, the blood pressure. So there is stress associated with the work place.

> However, I don't think that is solely responsible for the stress reported by the air traffic controllers. I think that the work environment was just as important. And research by Dr. Rose and others—some research that was done just after the strike—indicated that there had to be some changes in administrative procedures and participation of the air traffic controllers in management. That there were environmental kinds of stressors, job environmental kinds of things rather than the job task . . .

Dr. Ziegler also testified about FAA's stress research program and provided a paper on his findings for the hearings. Based on this review, he made the following recommendations to the subcommittee on the future of FAA's stress research program:

> 1. Stop all research projects related to the controller and stress financed by FAA. Millions of dollars and much in the way of human energy has been spent on this type research over the last 15 years. Many of the research projects duplicated others in research design to a significant degree.
> 2. Appoint a small group of interdisciplinary researchers to review research, by the FAA and others, and to review results and recommendations deriving from the research.
> 3. Consult with the FAA management regarding the reasons for the selection and rejection of research recommendations. Direct the interdisciplinary team to develop a body of recommendations.

APPROACHES NEEDED TO REDUCE STRESS

Stress authorities testified that there were several approaches that FAA might take to reduce the effects of stress. Dr. Karasek's research points to a need to redesign jobs that are overly demanding and that fail to provide workers with sufficient decision latitude to be challenging. He cited the assembly-line philosophy in the U.S. which provides jobs that are very stressful along these lines. Stress could continue to affect air traffic controllers unless the controllers are given additional control, and unless the organizational structure becomes less autocratic.

Dr. Sweney emphasized the people-to-people approach to stress in the ATC environment:

> I would like to look at the management processes, the management styles, and the management environment. . . . By and large, the FAA and air traffic controllers may be utilizing some management techniques that are exacerbating stress problems rather than controlling. . . . The absence of . . . a mutually dependent support group may very well be a critical problem. . . . They (controllers) have been asked to serve as adversaries in many respects for each other, to evaluate each other in terms of possible human reliability questions which may cause fragmentation in the agency as a whole.

Dr. Ziegler expressed a similar opinion, stating that the "work environment is just as important" as the job itself. The research of Dr. Rose and others "indicated that there had to be some changes

in administrative procedures and participation of the air traffic controllers" if there was to be a reduction in controller stress.

Based on his research on Hot Reactors, Dr. Eliot indicated that FAA should consider both: (1) pre-selecting individuals to be controllers and (2) helping controllers to perform their jobs without paying too high a price in stress. He testified that from a "safety standpoint and from what's best for the individual and the public, I would say that I wouldn't want Hot Reactors in the tower." His selection approach would require a screening of new controllers to weed out Hot Reactors. Dr. Ziegler referred to some activities that might address Dr. Eliot's second point: "I've read in some of the research a number of reports that were made about providing services, things such as medication, training in exercise, biofeedback, systematic deep muscular relaxation; there were a number of helps—counseling, psychotherapy—that could reduce stress."

Conclusions of stress authorities

The four stress authorities concluded that:

—Stress exists.

—Stress can have a very debilitating effect, both psychologically and physiologically.

—Accurate methods of detecting and measuring stress have been developed and applied.

—Effects of stress on the controller can be detected; stress can and should be treated by FAA.

—FAA management practices contribute to controller stress and need to be improved through such means as job redesign, controller selection, and greater controller participation in management.

—FAA research is adequate; the Rose Report is excellent; the findings and recommendations of past research should be critically reviewed by an independent group, and implemented where warranted.

FAA on Stress

FAA took a strong defensive position during our hearings that the occupation of controller is not uniquely stressful. On May 4, 1983, Transportation Secretary Elizabeth Dole testified that:

> No one has found a way to quantify stress. The Civil Aeromedical Institute has done a number of studies, and no study yet has indicated that there is stress unique to this particular occupation. So that is where we are in terms of the work that has been done, but there has just not been evidence produced that there really is unique stress.

FAA also testified that experts in controller stress do not exist, with possibly one exception. Administrator Helms stated that ". . . we haven't been able to find anybody in the United States that is an expert in stress and fatigue . . . and I hope you are going to be able to help me find one." Helms asked FAA's Federal Air Surgeon, Dr. H. L. Reighard, for his comment on the existence of stress experts. Dr. Reighard indicated that he was not a stress

expert himself, but "that if there is any such person, it would be Dr. Carl Melton . . . chief of FAA's Aviation Physiological Laboratory at the Civil Aeromedical Institute."

Although Secretary Dole testified that "we are not under the impression that this—stress and fatigue—is a problem," she outlined the general approach that FAA used to address stress and fatigue, as follows:

> . . . Since the beginning of the strike, the FAA has emphasized to the supervisors the importance of knowing their employees, of being alert to symptoms of fatigue, and we have asked that they specifically watch closely, and if there appears to be any problem along these lines, that they be relieved of their responsibilities for a rest period. It has also been stressed with the controllers that indeed if they feel any concerns in this regard, that they take a 15-minute period or a period of time to get off the scopes and to take a rest period . . .

Mr. Helms outlined the following program of stress-related activities in FAA:

> We are aware of no practical, objective means to isolate and monitor fatigue or stress alone, but we do have underway an individual performance quality control program for controllers that is intended to lead to the early identification and correction of minor deficiencies in performance. Because that is a long-range program we have taken a number of steps in the interim. We now have an introductory program at the FAA Academy on management of stress which provides a brief overview of the causes of stress and introduces ways to cope more effectively with stressful events. We have provided information on the management of stress in air traffic controllers to our regions, and will be supplementing that effort with a videotape on management of stress. I have also issued instructions for our flight surgeons, located at air traffic centers throughout the country, to develop a program of visiting high-activity terminals to talk to management officials and controllers, and to monitor work activities at those locations. Beyond these efforts, we're just not sure of additional efforts that would prove worthwhile, so *we would welcome any thoughts the subcommittee may have.*

The subcommittee did have "thoughts"—and concerns—about controller stress and continued to pursue them in subsequent hearings. During three days of hearings in March 1984, stress authorities, Drs. Eliot, Karasek, Sweney, Ziegler, Rose and Mohler, testified on their research and experience as it related to the controller occupation. The Rose Study was touted as the most comprehensive known study of occupational stress. These hearings convinced the subcommittee that stress exists and can have adverse health effects for controllers. The hearings also convinced FAA to acknowledge stress (and stress authorities) and to begin to do something to ameliorate its effects. The following statement by Acting Administrator

Fenello (April 1984) represented a positive shift from FAA's former position:

> We believe the steps taken by the FAA to reduce stress, monitor stress, and assist employees in dealing with stress, constitute an imaginative and effective program to address this concern. They are consistent with the findings and recommendations of studies on behalf of FAA, such as the Rose Study and the Jones Study. They also follow the published recommendations of professionals such as Professor Karasek, who has mentioned signs of stress to look for, and how to alleviate stress by improving communications, giving workers input into decisionmaking, and the like . . . We intend to monitor our efforts to make sure that they are productive.

However, the subcommittee's persistent probing of FAA witnesses revealed that specific FAA activities had not seriously addressed the effects of stress on controllers:

Annual physicals for controllers.—The primary purpose of annual physicals is to determine whether controllers meet published FAA standards; i.e., it is a general physical examination. Mr. Helms testified that physicians may look for signs of stress during these physicals. However, the subcommittee found little evidence that this was being done since: (1) FAA did not require the doctors to look for signs of stress; (2) the requirement for all FAA regions to have a flight surgeon had been dropped, so that some regions no longer have a full-time doctor; (3) even in regions with a full-time flight surgeon, many controllers are turned over to local medical examiners, as the surgeon serves primarily his own locality. Dr. Jones, flight surgeon for the Jacksonville Center, testified that controllers seldom voluntarily report stress. He sometimes uncovered evidence of stress during informal discussions with controllers at break. The subcommittee believes that part-time medical examiners, with no requirement to look for stress, will generally not make the effort to search for such unreported stress situations.

Psychological testing for controller ability to withstand stress.—Mr. Helms testified that FAA does not use psychological testing to ascertain controller ability to withstand stress. However, he indicated that FAA had experimented with such a program in two regions, but had no plans to continue. He indicated that preliminary findings of this experiment were that the tests were "filtering out those who would have become disillusioned in the first weeks of the academy anyway."

Funding for aviation medical research and development.—The Civil Aeromedical Institute (CAMI) is the medical research arm of FAA. Dr. Reighard testified that its staff had been depleted from a staff of 97 in 1979 to 72 in 1984. Dr. Mohler, former director of CAMI, testified that the reduction in CAMI staff and budget was a conscious effort by FAA to reduce CAMI's effectiveness by choking off its resources.

Stress studies.—The major FAA study of stress is the Rose Study conducted from 1972 to 1978. This study provided recommendations to FAA in the original study report of 1978 and in the executive summary of 1982. In addition, a number of CAMI studies measured

controller stress and provided conclusions and recommendations. Dr. Reighard testified—incredulously—that there were no recommendations from these studies that FAA found applicable or could use.

Checklist of stress and fatigue indicators.—On the first day of hearings (May 1983), Chairman Levitas asked FAA to consider developing criteria to enable supervisors and others to identify signs of controller stress and fatigue. In June 1983, Dr. Reighard responded that FAA had made a "positive determination . . . not to issue a checklist of fatigue and stress indicators." The subcommittee continued to press for greater emphasis on stress identification. In April 1984, FAA Acting Administrator Fenello stated:

> Following up on the hearings held before this subcommittee last year, Dr. Reighard canvassed 26 organizations such as the American Psychiatric Association, medical schools, public health facilities, and corporations, along with qualified individuals, to develop a checklist of warning signs to look for in order to detect stress and fatigue. Through this effort he found one checklist which has been used by a major corporation for several years and has been found by them to be a helpful guide for their supervisors to use in discovering and assisting employees who are under strain, for whatever reason . . . Dr. Reighard has sent a copy of this checklist to all air traffic supervisors, through the regional flight surgeons, for use in all air traffic facilities.

In summary, over the course of our hearings, FAA's position on stress shifted from that of little acknowledgment to that of concern accompanied by increased action. FAA's past stress-related activities did not hold up well under subcommittee scrutiny—indicating a lack of full agency commitment. FAA even failed to act upon the results and recommendations of its own stress research. These hearings placed FAA on notice that the subcommittee is serious about stress amelioration, and FAA has responded by taking the initial step.

These hearings also suggested some possible benefits from a meaningful stress program in FAA. Congressman Guy Molinari, Ranking Minority Member, addressed potential labor-management benefits as follows:

> Once a well-thought-out program is in place, then the subject of stress should no longer be one of the key arguments by an employee or employer group. The fact that PATCO made it such an important part of their bargaining position and that FAA, in reacting, claimed it virtually did not exist, gave the subject a good deal of mystique, and, as a result, neither side addressed the problem in a coherent manner.

Most importantly, the subcommittee believes that the traveling public needs the safety assurance that a stress-detection and treatment program could achieve.

COMMUNICATION FILTERS

Subcommittee hearings documented a pervasive system of communication filters within FAA's bureaucracy—filters which distorted, or even prevented, the flow of information from top to bottom, from below to above, and from within the agency to outside parties. These communication filters, until and unless acknowledged and addressed by FAA top management, will continue to plague employee/management relations and will seriously impede meaningful action or progress within the agency.

THE "LEESBURG LETTER"

In early August 1983, a letter addressed to FAA Administrator J. Lynn Helms from 135 FPL controllers detailed major problems concerning morale, staffing levels, training and overtime in the Washington Air Route Traffic Control Center (Leesburg, VA.). When asked by Chairman Levitas why controllers found it necessary to take that action instead of reporting conditions directly to supervisors, Washington Center controller Gregory McGuirk testified:

> . . . The first-line supervisors are there in the trenches with you. They are as frustrated by the system as we are. We have come to find that beyond the first levels of supervision, a filtering process begins. By the time [information] gets to someone who is able or willing, or both, to do something about it, it has been completely distorted.

Upon receipt of the Leesburg Letter, Administrator Helms contacted Eastern Regional Director Joe Del Balzo, who traveled to the Washington Center and talked to "every controller that was on that floor individually":

> I talked to many signers of the letter, and I asked [the] same question: Why would you take this particular route to surface that problem?
>
> I believe that they were feeling a sense of frustration, that they were concerned that their concerns would be filtered, and they wanted to be sure that their massage would be heard.

As a result of the Leesburg Letter, FAA took several actions. A memorandum was issued by the Leesburg Facility Manager to supervisors specifying that no controller was to work overtime involuntarily. A Human Relations Panel, apart from the already existing Human Relations Committee, was set up to define and address facility problems. Controller Kurt Zimmerman, a member of the Leesburg Human Relations Panel, testified that controllers requested more personnel meetings to improve the information flow from bottom to top and from the top to bottom of the organizational hierarchy.

Curiously, while FAA reacted to problems raised by the Leesburg Letter, management perceived this episode not so much as symptomatic of major problems within the system, but as a demonstration of the responsiveness of the system.

Said Eastern Regional Director Del Balzo:

> The message was heard. I think the way we handled their concerns, I believe convinces them they don't have to make their concerns heard that way.

This questionable logic, however, begged the question: Would FAA top management have acted with such swiftness and directness had the message been filtered through a multi-layered middle management?

As Mr. McGuirk testified when asked about FAA's response to the Leesburg Letter:

> We have had a tremendous response to the letter at the higher levels. But it was a direct communication from the trenches to the hierarchy—no filtering involved whatsoever.

For the Eastern Regional Director to have come from New York to try and solve problems in the Washington Center evidenced a serious management problem. Testimony from Mr. Helms indicated that Leesburg might not represent an isolated situation:

> Mr. LEVITAS. . . . there obviously was some problem at Leesburg before that letter was written in August or else it wouldn't have been written, and . . . there has been a response to it.
>
> Fine, that is moving in the right direction. The question is, . . . why did they have to resort to that type of mechanism; shouldn't there be something in the agency to deal with it before it gets to that point, and the other question is, do we know how many other Leesburgs there are?
>
> Is Aurora, Illinois, a Leesburg; is Atlanta a Leesburg just waiting to happen?
>
> Mr. HELMS. . . . I am just not sure yet. I think we have a problem at Aurora, Illinois; I think we have in New York, particularly on Long Island where the New York Center is; I think we have one at Cleveland and Indianapolis because they are the four where we have a relatively high rate of overtime.

In FAA's rigid management structure, individuals or groups go outside the "chain of command" at great professional risk. For 135 FPL controllers to have contacted the Administrator directly was indicative of both the severity of problems at the Center itself, and major filtering problems within FAA.

> Ralph Kiss: In the Interest of Air Safety and Our Survival, We Must Act Now.

In late May 1984, Ralph Kiss, Facility Manager of the Denver Air Route Traffic Control Center, wrote a memorandum soliciting interim authorization for additional sectors "to cope with the ever-increasing air traffic saturation." In this memorandum to FAA's Northwest Regional Air Traffic Division Manager David Jones, Kiss noted that:

> (1) Flow control restrictions were being lifted while more airplanes were being fed into the system.

(2) There were too many aircraft in the system; sectors were becoming overloaded and traffic peaks were too high.

(3) Controller work loads were overtaxing capabilities, leading to a reduction in safety or a very high risk of midair collision; safety of the system was coming under jeopardy.

(4) Additional sectors were needed.

(5) Unused sector equipment was available.

(6) Additional sectors should be manned by using all available resources until staffing levels become adequate.

(7) In the interest of air safety and survival, "we must act now."

On June 26, 1984, Ralph Kiss recanted parts of his memorandum (items 3 and 7 above) in testimony before this subcommittee, saying that he had overstated his case to try to justify immediate approval for the additional sectors. Kiss acknowledged that only after the memorandum became public had he decided to delete these sections.

Kiss' retractions raised two very serious issues: (1) If the memo was the truth when Kiss authored it, the Air Traffic Control system had graver safety problems than were previously apparent or, (2) if the memo was an exaggeration, why did an FAA manager with 32 years of experience resort to phrases such as "safety of the system is coming under jeopardy" in order to justify a request?

Kiss indicated that parts of his memorandum were less than truthful in this exchange with Chairman Levitas:

Mr. LEVITAS. I am concerned that as I understood your answer to Mr. Molinari's question that you said that you engaged in either exaggeration or over-exaggeration in order to make sure that it got approval.

Mr. KISS. I am not exactly sure what I said in my testimony, but what I meant or what I said was that I overstated my case from a standpoint of trying to ensure that I got it approved before I left, and I did not feel that I had time to write it in the normal manner that I would for justification. Time was pressing on me and I wanted it done before I left, sir, and I used some terminology I should not have used.—

Mr. LEVITAS. Well, let's take that at face value, and I will get back to that in a minute.

Now, what you are saying at face value is this, that because of whatever reason, time constraints, getting something done in a short period of time, getting it done at all, providing the necessary justification, that you felt it was necessary, even assuming you didn't feel it was true, . . . but you felt it was necessary to use words which have made headlines across this Nation, which have caused great concern in a lot of people, including this subcommittee.

Now, you know what that says about your view of the system and the agency with which you are dealing? It says that you are so concerned that unless you use language of that sort, even if it is not your belief, that it is necessary

to shake something out of the system in a fashion of that sort.

Now, would you comment on that?

Mr. KISS. I can only comment from the standpoint that *I, at that moment and at that time, felt it necessary to make those statements even though I did not believe the system to be unsafe.*

Mr. LEVITAS. I think that is exactly at face value one of the problems that exists within FAA today, that a person who is within one year of retirement, an experienced manager and experienced controller felt that he had to make statements that were of such an alarming nature to get something accomplished in the time frame necessary that he would resort to this approach.

Mr. Molinari pointed out that one of the given reasons for Mr. Kiss' choice of language in the memorandum was that the author "wanted to get his message across," the inference being that short of using such dramatic language, the message might never have been duly received and acted upon.

Although the Kiss memorandum was dated May 21, 1984, it did not come to the attention of FAA Administrator Donald Engen until June 21, 1984, when a television interviewer showed him a copy. Asked by Ranking Minority Member Guy Molinari why no one in FAA thought the memorandum was important enough to bring to his attention so that he could respond to questions, Engen testified:

I would respond to that, Mr. Molinari, prefacing my final remark by saying that the sectors already had been implemented and the problem had been taken care of in the field out there, and I think, interpreting for them now, they probably felt that the actions had been taken, that the intent was to increase Denver by the three sectors.

That was done. The words that went with it—I don't know—they felt not necessary to pass up the line.

FAA'S DIFFICULTY EXPLAINING PROGRAMS

Mr. Helms acknowledged FAA management's difficulty in communicating program changes in his opening testimony of October 28, 1983:

Clearly, any time you change traditional ways of doing business, and this applies to any organization, there are likely to be concerns expressed within the work force. This is simply human nature.

What management must do is communicate with the employees, let them know that different does not mean worse. I continue to see the need for added improvements in our communications with each other in the FAA and find that many times, what underlies a problem is not really the problem itself, but a shortcoming in communications.

The earlier testimony before this committee today clearly indicates that our working level controllers still do not

understand that the quality control program includes immunity. That what we are after is to help define where the errors are and go back to that controller and walk it through with him step by step by step so he can see where he made the error with immunity from that error.

In his opening statement at the April 4, 1984, hearing, Ranking Minority Member Guy Molinari expressed his concern with FAA's downward communications as follows:

> . . . There always appears to be a problem with management within the FAA in explaining its programs such as resectorization, structured staffing, and now the Human Relations Committees and Air Traffic Control system to everyone in a manner in which they are understood and can be appreciated.

Testimony from controllers indicated varying interpretations of the disciplinary consequences of the quality assurance program, confusion and anxiety over the proposed structured staffing program, and lack of knowledge of, or joking references to, the Human Relations Committees.

Chairman Levitas and Mr. John Azzarone, chairman of the Human Relations Committee in the New York ARTCC and a working controller, discussed the differing perceptions of the Quality Assurance Program in this exchange on March 20, 1984:

> Mr. LEVITAS. The reason I was asking [about your knowledge of the disciplinary consequences of the quality assurance program] is that at the last hearing the program explained to us by FAA officials in headquarters, and as understood by controllers in Leesburg and Los Angeles, just to name two, were diametrically different. And even today, amongst yourselves, you're giving different answers. They're not right or wrong, that's not the point.
>
> Mr. AZZARONE. You're actually right, Mr. Chairman. And one of the things I've been able to determine in my investigation and my research into the Quality Assurance Program is, one, I wanted to determine the intent of the program so as to assure the controllers at New York Center whether or not it was meant to be a punitive program, or if it is genuinely a program to assure quality, or if it's a combination of the two. But somehow, in my investigation, I found out that different controllers throughout the country did have different perceptions of the program and that it was being related, communicated, in different ways.
>
> And what we are seeking is a clarification of the program at the national level, so that we can give one message to the controller work force so that they know what is expected of them now as far as working procedures and responsibilities.

Although the Human Relations Committees were ostensibly set up to improve the communication flow between employees and management, most HRC chairmen testified at the hearings that

the committees were not equipped to deal with issues of regional or national interest.

Major issues facing the ATC system, including lack of staffing—particularly the lack of seasoned controllers—continued overtime, 6-day workweeks, declining morale, and increased traffic, have not been negotiated by Human Relations Committees.

Said Chairman Levitas to Mr. McCann, in reference to morale-related problems such as mandatory overtime and staffing shortages:

> If [these problems] are not getting to your Human Relations Committee, then I think we need to know why, because they are the type of things that ought to be addressed at that level if it is going to do any good at all, rather than coming to the congressional investigators.

FAA'S "INFORMATION MANAGEMENT"

FAA has, on occasion, provided information to this subcommiteee that could not be taken at face value. During the hearings, such "information management" was apparent when FAA was asked about overtime workweeks, staffing numbers, and FPL controllers as a percentage of the total controller work force.

In regard to overtime, Administrator Helms made the following statement at the June 7, 1983, hearing:

> No one is scheduled for and must work a 48-hour week today.

Under questioning from Ranking Minority Member Molinari, Helm's position underwent a subtle, but perceptible change:

> Mr. MOLINARI. Mr. Helms, [you] mentioned that there was no controller today that, if I understood you correctly, that is working a 48-hour week?
>
> Mr. HELMS. Under normal conditions, none of them work more than 48 hours a week . . . We don't object, as part of the human relations program, to swapping shifts with each other.

Mr. Helms went on to say that he was not familiar with the work schedules of the individual facilities and individual controllers, and the controllers "pretty well set up the schedule which they would like":

> Mr. MOLINARI. Are you familiar with the work schedule at Indianapolis and what the average controller is working there?
>
> Mr. HELMS. I am not familiar with the individual centers or the individual controllers. What we do is . . . let them pretty well set up the schedule which they would like, and the individuals' names are then posted.
>
> Mr. MOLINARI. I am talking the average, now.
>
> Mr. HELMS. Yes, sir, let's say Mr. Jones was posted, and he happened to be up on the sixth day, 48-hour week, he is then allowed to go to his supervisor and say, 'I really don't feel like working Saturday, I want a two-day weekend,' in which a replacement is put in for him so the work sched-

ule would have shown him as 48 hours, he would not have worked 48 hours if he didn't agree to it.

No one is continually scheduled for a 48-hour workweek.

Thus, Mr. Helms' original position that "No one is scheduled for and must work a 48-hour week today," evolved to "No one is *continually* scheduled for a 48-hour workweek."

FAA's position evolved still further in this exchange later the same day:

Mr. VAN VUREN. . . . It is true, like the Administrator says, we have a number of facilities where they are scheduled for a 40-hour workweek. They may go two or three weeks before they work a 48-hour week.

We have some locations where they are working a 48-hour week, but not exceeding 48.

Mr. MOLINARI. I don't believe that was the statement that was made by Mr. Helms. Mr. Helms, to the best of my knowledge, said categorically, no one is working a 48-hour shift today, am I right?

Mr. HELMS. That is right, no one is working a 48-hour work week every week. To the best of my knowledge, that is the case.

At this point, FAA's position that "no one is continually scheduled for a 48-hour workweek" had shifted still further to the acknowledgement that controllers were working 48-hour weeks in some locations. The reality, as detailed by the hearings and subcommittee investigation, is that controllers and supervisors have continually been scheduled for and worked overtime during the rebuilding process.

Another instance of FAA's information management became apparent during the final hearing day when Chairman Levitas attempted to clarify the staffing numbers of full performance level controllers. He noted that a Transportation Department memorandum to the Office of Personnel Management specified a staffing target of 12,389 FPLs, but as of the date of the memorandum—less than a year old—only 6,331 controllers were rated as FPLs. He further noted that FAA Administrator Engen had indicated a week earlier that the number of FPLs was approximately 9,800—an apparent increase of more than 3,400 FPLs in less than a year.

Chairman Levitas asked whether the number of FPLs had increased to 9,800, leading to the following exchange with Mr. Engen and Mr. Van Vuren:

Admiral ENGEN. I think we are talking apples and oranges, and I can hopefully clarify that, Mr. Chairman. We have on board as of the end of May, 6,149 radar controllers. We have 3,636 non-radar controllers. This becomes 9,785 qualified controllers. That was the figure I was using.

Mr. LEVITAS. But they are not full performance level, though.

Mr. VAN VUREN. The difference between full performance is sort of an acronym that is used. When you talk about full performance, we are talking about somebody

that is qualified in all positions of operation, and is at the GS-14 or the highest grade in that facility. And that doesn't mean that everybody in that facility has to be at that grade to be productive.

Prodded by further questioning, Van Vuren acknowledged that FAA had changed the system by which it defined controller qualifications.

Levitas expressed skepticism about the "numbers thrown around," and requested clarification of an FAA memorandum specifying 75 percent as the minimum percentage of FPLs needed to operate a center:

Mr. LEVITAS. That is why I think when we hear some of these numbers thrown around, I get very suspicious, because you may, as you say, be mixing apples and pears, and I do not know whether or not—I am sure I do not understand it, and there may even be one or two other people outside of FAA that do not understand it. But let me tell you where that grates with another point and the last point you just made, Mr. Van Vuren, I think, logically leads into this.

We came across a statement in this that we had not heard before, and which was the reason I had asked the earlier question as to the number of controllers that may be required, FPLs, to operate a center, and the statement reads as follows, and I quote: "Due to the technically complex nature of air traffic service duties, it is essential that at least 75 percent of the work force be capable of performing all duties."

That is the quotation. Now, I am not sure I understand what that means, but if it means what it sounds like it means, that the distinction that you have made between radar qualified controllers and non-radar qualified controllers would not meet that standard.

Van Vuren explained that the 75 percent figure was used to justify a waiver to the Whitten Amendment, which required controllers to spend one year in grade between each grade. This would allow FAA to promote "fast-achievers" to a GS-14 level within two years and two days, as opposed to the five years it took before the strike for an individual to become a GS-14. The only way to get that waiver, Van Vuren maintained, was to provide OPM with a percentage figure of the controller work force capable of performing all duties (full performance level), and a date by which that percentage would be achieved.

Levitas pressed Van Vuren as to why the 75 percent figure was used, and was told that Van Vuren did not know its significance:

Mr. LEVITAS. Okay, but there are some implications in this other than the arcane counting of OPM and Whitten Amendment waivers, that there is a real live world out there that this relates to. Does it mean that all centers should have 75 percent staffing by FPLs before they can have traffic at pre-strike levels?

Mr. VAN VUREN. No.

Mr. LEVITAS. Does it mean they have to attain that level before traffic is increased?

Mr. VAN VUREN. No.

Mr. LEVITAS. If a center has less than 75 percent full performance level controllers, is the center still operating with an adequate work force?

Mr. VAN VUREN. Yes.

Mr. LEVITAS. Then why did you use the figure 75 percent?

Mr. VAN VUREN. Like I say, that figure was a figure that the Office of Personnel Management, I believe—now, this is coming from another shop writing that letter. What I requested was that they give me a waiver to the Whitten Amendment so that I could promote fast achievers. Fast achievers are people who have military experience in air traffic control and what have you. Rather than have those folks have to wait around for five years to be a controller, or GS–14 controller, they can do it in two years and two days.

Mr. LEVITAS. What is the significance of the 75 percent figure?

Mr. VAN VUREN. I am not sure really what it means.

Mr. LEVITAS. Well, now, you know, somebody needs to know, because I have got a sneaking suspicion that it may be a Ralph Kiss approach revisited, that it is a figure that is put in there in order to shock somebody, a scare tactic, if you will, to get some response from OPM.

Mr. VAN VUREN. We could have used 25 percent, I think, or we could have used 50 percent. We used 75 percent because we want the waiver to last for a while until we feel that we have had an opportunity to promote all these people that are fast achievers for the next year, and that waiver will go out in August of next year. It expires.

Mr. LEVITAS. Well, okay. If you would supply to the subcommittee, for our record, what the 75 percent figure is, why it is, and does it have any significance, or is it just a good round number?

Subsequent to the hearings, information was provided to the subcommittee explaining that the 75 percent figure was used because the pre-strike controller work force averaged about 75 percent full performance level controllers.

The subcommittee is not the only group that has had difficulty extracting meaningful information from FAA. John Galipault, head of the Aviation Safety Institute, expressed frustration in trying to obtain safety-related data from FAA. Galipault made the following comment during his October 28, 1983, testimony:

> I still believe that the FAA did a masterful job managing information since 1981. And I think that if they could manage people as well as they have managed information, then I think we would have a fantastic system.

AN INSTITUTIONAL PROBLEM

While the subcommittee cannot positively state that there is a concerted effort made within FAA to prevent or distort the communication flow, it is clear that, in the words of controller Jack Crouse, "The story coming out at the top is not always the story that goes in at the bottom." It is equally clear that the information flow from top management to "the trenches" has at times been less than effective.

Chairman Levitas highlighted the subcommittee's concern with FAA's filter system in this exchange with John Galipault, President of the Aviation Safety Institute:

> Mr. LEVITAS. The concerns that you have expressed in your testimony this afternoon certainly highlight the reason we are here today. Is it your belief, based on your observation of the Federal Aviation Administration over these years, that part of the problem, a major portion of the problem, is something institutional in the agency that makes it difficult or impossible for the top management . . . to get accurate information up from the trenches, so to speak?
>
> Mr. GALIPAULT. Well, I have never had the opportunity to sit in on any briefing that the FAA has given internally. I am not aware of the specific data that Mr. Helms receives. I have never been privy to that. I happen to know Mr. Helms, and I feel that he is a tough taskmaster. He understands aviation, and he and I have our differences, but we have our agreements too.
>
> But I still have to believe that we have a faceless bureaucracy which acts as a filter system that limits the information being received. I may be wrong, but from where I sit out on the mountain top in Ohio, it is there.
>
> Mr. LEVITAS. I must say, based on my experiences with FAA in the last nine years as a member of this subcommittee, that is about the conclusion I have come to. I have got to believe that Lynn Helms and Langhorne Bond and Dr. McLucas are people who are very capable and competent individuals, are concerned about it. Yet what I have seen time and time again, and Mr. Helms knows this and I have said it to him, that when he comes before this subcommittee and provides us with information based on data generated for him by other people, it is not the same system we hear about when we go out and our staff goes out, and looks at it from the other side.
>
> I have got to believe the reason for that is that the full information, the total picture, is not getting up to top management. I think this was part of what the General Accounting Office identified in their study several years ago. . . .

Likewise, Leesburg controller Crouse noted a perception among the rank and file that initiatives from top management become diluted before they reach the controller level:

> I feel the same is true in the reverse situation. Unless Administrator Engen is talking to the news media or talking to us personally on a facility visit, a lot of the things that he may want instituted and things that he feels will be best for the system, by the time they reach us, don't always look exactly like they started out.
>
> Again, I hate to bring up a problem without having a plausible solution, but I am afraid that is what I am doing, gentlemen. I am pointing out a problem that I don't have a solution for.

This subcommittee believes that until a solution is found, and applied, for the communication filters within FAA, the problems that existed within the Air Traffic Control system prior to the 1981 strike will continue to plague the system.

FAA's Human Relations Difficulties

FAA has had long-standing difficulties with employee relations—it has not treated people as people. The PATCO-Management impasse was the most obvious result, but major problems remain long after the strike has been resolved.

BACKGROUND

Lawrence Jones, Chairman of the FAA-funded Task Force which studied management-employee relationships following the strike, testified that FAA's working relationships were a major factor in the strike:

> We found when we started the study that the prevailing opinion in the management group of the FAA was that the union had caused the strike, caused the problem. We found very quickly that the dissatisfaction was not caused by the union, they only played it into the tactics of the strike. The problems of working relationships within the FAA were exploited by the union but were not caused by the union.

Jones amplified this statement by citing the working relationships and events that led to the strike. The unevenness of traffic flows—peaks and valleys—involved in air traffic control created a difficult work environment which placed a strain on management. During the 1960's and 1970's, the whole Air Traffic Control system was being challenged to keep pace with growth in the Nation's airways; thus, FAA began lobbying the Administration and Congress for additional funding for personnel and equipment to control traffic. The lobbying effort of PATCO for wages and additional control staff helped FAA in this effort and thereby improved PATCO's status with FAA.

Jones identified the military orientation within FAA's Air Traffic Control system as a factor contributing to poor human relations:

> . . . the military rules, regulations and culture were recreated within the Air Traffic Control segment of the FAA. "I give a command. You obey." Being not a military organization but a civilian organization there were those

> in the system who over time were inclined to say: "Why? Why should I?" So the military orientation within the FAA had a great deal to do with the problems.

He indicated that the cultural changes from the 1960s to the 1980s exacerbated this situation, since new employees were better educated, less inclined to take orders blindly, more curious, and expected more teamwork involvement in leadership. PATCO apparently decided in 1978 or 1979 to stage a strike, if needed, to gain its objectives; at about the same time, FAA began to plan to respond to a strike. Thus by 1981, Jones testified: "You had two organizations . . . spending all of their energies to either create the strike or deal with the strike."

Dr. David Bowers, a member of the Jones Task Force, personally responsible for evaluating the organizational climate in FAA following the strike, testified that he considered the most important Jones Study findings to be:

> . . . a whole cluster of findings that were intertwined but that had to do with the nature of the human organization management practices in the FAA. These were subject to a lot of interviews and conversations that we had as we went around the . . . facilities but also from a very systematic survey, using a standardized instrument, that we conducted in the course of our task force work.
>
> Measures that I have seen in many, many, many other places, public and private, all kinds of organizations . . . showed that in some basic dimensions, basic things that are characteristic of organizations the communications flow or how decisions are made, as well as the style of supervisory leadership and behavior, the basic treatment of people—that the agency was very, very poor. . . . There were positive pockets in it, obviously. There were certainly some people, a minority of supervisors and managers, who appeared to be very, very good. But they also appeared to be swamped in a sea of such people who were very, very poor.
>
> There were a couple of other things that I think were fairly critical. One was what we called in the report 'theory X and the generation gap.' There was a prevailing—and I assume still is in most of those levels—prevailing value system along the lines of autocratic management, a belief that the way to lead people is to bark orders and expect them to respond. On the other—and it's a pattern that there is a generation gap to begin with. The bulk of the controllers, however, were younger; many of them were Vietnam veterans. And we know from a lot of research that the younger people absolutely reject that style of management. They want to be asked, not told; they want to be consulted, not ordered around . . . .

Mr. Jones testified that from his perspective FAA had paid insufficient attention to human relations:

> . . . too little importance, too little skill, and too little attention have been paid by the FAA to the selection, pro-

motion, training of managers capable of handling employees—particularly, but not solely within Air Traffic—in an efficient, professional manner that promoted effective teamwork, quality communication, and a caring culture. By caring, we mean a culture where all people dedicate themselves to excellence at their tasks and equally to the appreciation and fulfillment of the legitimate human needs and aspirations of individuals within the work group.

The Jones Report *(Management and Employee Relationships within the Federal Aviation Administration)* provided recommendations to improve FAA's management-employee relationships, the principal ones being summarized as follows:

FAA should be accountable to the Secretary of Transportation for the development of human resources, a responsibility requiring managers "capable of obtaining the commitment of talented employees," and "capable of building teamwork within a complex and technical organization."

Implement a human resource program to eliminate confusion resulting from the exodus of the union, including a "written set of employee rights," human resource specialists in the field to help "employees and supervisors open up blocked communications," and management-employee teams to work together on matters of importance to the team.

Adopt a comprehensive program of management development, hiring and training that "emphasizes keeping all employees well-informed, offering employees a chance to participate in appropriate decisions, and producing strong teamwork attitudes."

Consistent with the Jones Study recommendations, FAA initiated several post-strike activities intended to improve controller-management relations:

Establishment of Facility Advisory Boards (FABs) in the air traffic control facilities (Jan. 1982.)

Establishment of Human Relations Committees (HRCs) in the facilities (July 1983). When HRCs were established, FAA realized that there was some duplication with FABs which had been handling human relations, so FAA gave HRCs the role of human relations and FABs the role of operational and technical concerns. Local facilities have extensive discretion to set up and emphasize HRCs, FABs, or Employee Forums (similar to HRCs) as management deems appropriate to facility issues.

Addition of human resource specialists to advise and educate both management and staff on improving human relations.

Improvements in management training, placing heavy emphasis on handling people. Review and redesign of job descriptions for managers placing emphasis on ability to manage people.

Development of an employee rights handbook.

Establishment of a national Supervisors Committee (SUPCOM) for first-line supervisors (supervisors immediately above the controller level).

HUMAN RELATIONS PROBLEMS

Managers, human relations experts, and controllers presented a range of perspectives on the nature and severity of human relations problems affecting air traffic control. Overall, it appears that little progress has been made in improving the relationship between employees and management since the strike—the same human relations problems remain. These problems include the prestrike adversarial feeling of "us" versus "them," the autocratic nature of FAA management, the lack of an effective means of communicating employee concerns to management, and management not acknowledging problems that have been identified.

STAND TOGETHER OR FALL APART

The strong FAA-PATCO polarization was eliminated when the union was dissolved following the strike; however, a management-employee polarization has emerged in its place. Thus, an opportunity to mitigate a major human relations problem has been lost.

Dr. Bowers testified to this effect in response to a question by Mr. Molinari:

> Mr. MOLINARI. Listening to your testimony, Dr. Bowers, I get the impression that as it concerns management and the employees, that perhaps they are just about as far apart today as they were prior to the strike. Would that be a correct impression?
>
> Dr. BOWERS. I don't know for a fact. I have not been in the facilities lately, but I would suspect that you're right. It is at least consistent with something a controller told me. This was a controller who was about to retire, who had not been a member of PATCO, and who did not go on stirke. He said that in the days leading up to it, the management divided them into two kinds of people: good guys and bad guys. The good guys were management, team supervisors and the controllers who were known would not go on strike. There was the honeymoon period in the immediate wake of the stirke, two or three weeks or whatever it was, maybe a month, of teamwork and good relationships, and he said, "Suddenly, they woke up and the world was divided into good guys and bad guys again. This time, the managers were the good guys and the bad guys were team supervisors and controllers."
>
> And it perplexed him but it didn't perplex me so much, because the management system is one that requires that you have bad guys, and if you don't have any, you have to invent them. So I would imagine that it's problably very similar.

Bowers continued that a "significant source of stress is just exactly that, the absence of a collaborative, teamwork relationship

between supervised and supervisors, between management and employees."

Extensive testimony from both management and controllers indicated that the feeling of "us" versus "them" had been reborn. A January 1983 memorandum from the Atlanta Center Manager to his regional office cited by Chairman Levitas during the March 20, 1984 hearing, indicated that comments such as "They—the FAA—abandoned us," were common.

The Air Line Pilots Association (ALPA), a concerned user of controller services, has monitored the post-strike situation. Captain Duffy, President of ALPA, expressed indignation that FAA management refused to even appear on the same workshop panel with controllers:

> . . . what we ran into in planning the workshop was an FAA tieback to some of the old PATCO attitudes, and that is where they are not going to sit down with management and the controller on the same panel and answer questions. There is a lack of openness there, and if there is one thing that we need right now, it is to fully identify what is going on in the system so we can fix it.

COMMAND AND OBEY

An autocratic style of management is generally not well received by today's employees. Yet such a style thrives in FAA, and it creates the situation detailed by the testimony of Dr. Bowers:

> . . . most of the supervisors and managers come up from the boards over the years.
>
> I think one thing that happens is they are accustomed to vectoring aircraft. They become a supervisor and then on up the ranks of management, and they attempt to manage by vectoring people. But people don't vector. Nevertheless, they have a management philosophy that emphasized top-down direction, top-down control, autocratic behavior, and says that this is indeed what gets results.

Dr. Bowers followed this with an even more "hard-hitting" statement (one not included in the Jones report):

> And one part of it that is the stickiest and the most troublesome—and there may well be no solution to—is the 40 or 50 or whatever percentage it is of managers and supervisors who will never make it in any other kind of system than that one, who know no other behavior form than the autocratic.
>
> Those people should be replaced. And how you do it, I don't know. But I am fairly certain that nothing is going to change dramatically until that happens.
>
> But along with that, a program of building the management skills in dealing with people on the job, not just in off-the-site training seminars, but in building those skills and an honest-to-goodness organization development effort that starts from the top and goes on at all levels. That is what I think is called for.

Representative Sundquist, feeling that Dr. Bowers had made a strong statement, questioned him further on his rationale, as follows:

> Mr. SUNDQUIST. In that experience, when you go into a plant operation and there are these kinds of problems, have you ever said that 40 or 50 percent of those supervisors need to be replaced?
>
> Dr. BOWERS. I can't recall any instance in which I said that or would have had to.
>
> Mr. SUNDQUIST. What makes this so much different than other industries?
>
> Dr. BOWERS. Because of the high proportion of people with a management value system that is really paramilitary. We would find only, I don't know, maybe 10 or 15 percent perhaps in an industrial plant who might fit that pattern, but to find that many concentrated in one agency is surprising.
>
> Mr. SUNDQUIST. Have you ever done any work for the military?
>
> Dr. BOWERS. Oh, indeed, I have.
>
> Mr. SUNDQUIST. What happens when you have a paramilitary situation there where they have the same kinds of disciplines?
>
> Dr. BOWERS. Well, the irony is that the paramilitary style that seemed to be prevalent in the FAA is not one that I have encountered with any frequency in the Navy nor in the work that I have done with the Army.
>
> Mr. SUNDQUIST. You are saying it is not military-type of discipline in the FAA?
>
> Dr. BOWERS. It is not the kind of . . . discipline in the sense of treatment of people that you would encounter in today's Navy or even in today's Army.
>
> Mr. SUNDQUIST. Do you think people who are apparently autocratic by nature cannot be made or trained as supervisors?
>
> Dr. BOWERS. It depends on a couple of things. It depends on how deeply engrained and meaningful that autocratic belief system is. If it is deeply engrained and it goes right back to basic view of yourself and your worth in life, and if you're anything other than harsh and autocratic, you are a weakling and no good, then it is very difficult.

GETTING THROUGH?

Controllers continue to experience difficulties communicating problems and perspectives to management. Controllers feel that they are on the "front lines" of the Air Traffic Control system and thus are in the best position to view and assess the day-to-day operations of that system. However, if management provides no communication vehicle for controllers to express these insights, and if management develops policies inconsistent with these insights then controllers feel a frustration that can lead to stress and low morale.

The 135 FPL controllers who sent the "Leesburg Letter" directly to Administrator Helms obviously felt that their message had little chance of "getting through" the layers of bureaucracy to someone who might act on their concerns, otherwise these controllers would not have run the risk of circumventing the required management channels. In a large autocratic organization, such circumvention makes the intermediate managers look bad, since it implies that they are unable to handle their own problems. In turn, these managers may retaliate against their employees—either directly or in subtle ways.

Ralph Kiss, author of the so-called Kiss memo and former manager of the Denver Center, must have felt a similar frustration at not getting through since he resorted to strong statements in order to justify an administrative request. He stated, in part, that: "Controller workloads are such that capabilities are being overtaxed. This has led to a reduction in safety or a very high risk of midair collision. Safety of the system is coming under jeopardy." Such strong language is not normally used in air traffic control, and thus could be considered threatening to his bosses.

In both the Kiss and the Leesburg controller cases, no retaliation by management was apparent. However, Mr. Weems, a Los Angeles supervisor and controller, was not so fortunate in his attempted communication. Mr. Weems testified that he was having problems with targets which would jump positions on his radar, and that he reported it to management. He was requested to provide, and did provide, documentation of the problem—and more documentation. Mr. Weems testified that since this approach was getting nowhere, he then described the radar deficiency in a quarterly report. In response, he received a written reprimand and was ordered to take a psychiatric examination, which he did after consulting his lawyer. Mr. Weems filed a grievance based on being ordered to take this examination, but the grievance was investigated by the manager in charge of the same problem radar about which Mr. Weems had complained. Not surprisingly, the grievance was denied.

Mr. Weems testified that he continued to be harassed until he requested—and received—a transfer to the controller position, thus relinquishing his supervisory duties. As a postscript, Anthony Skirlick, Los Angeles controller, testified that the radar about which Mr. Weems had complained was being repaired at the time of the hearing, thus supporting Mr. Weems' original complaint. This was a case of *not getting through* and, consequently, paying a heavy price.

Mr. Damalas, an Atlanta controller, testified that the Atlanta Center controllers and supervisors disagreed with the management decision to give Atlanta additional airspace, but to no avail:

> Right now we do not have any communications whatever straight to the top. Everything that has to be done, any changes, such as the airspace that I am talking about . . . all of the controllers and the supervisors are saying we don't need it. We cannot handle it, postpone it. The facility chief says I am sorry, it was forced upon us, I don't want it, but that is it. We are going to work it.

WHEN A PROBLEM IS NOT A PROBLEM

Human relations problems are very real problems. They can, and often do, impact on the morale of the work force and the performance of the ATC system. Any attempt by FAA management to minimize the importance of such problems or to ignore their existence is a self-deception that can, and often does, exacerbate the problems themselves. The FAA used several problem-dodging techniques during the hearings, including blaming problems on "communications" or "perceptions," blaming problems on a "vocal minority," and denying the existence of problems by declaring the ATC system "fully recovered" when such was not the case. The following quotes are illustrative:

"Communications" or "Perceptions"

> [I] find that many times what underlies a problem is not really the problem itself, but a shortcoming in communications . . . (Helms, October 28, 1983.)
>
> . . . The chairman used the phrase, we had a problem. I would agree at least we have a perceived problem. Whether we really had a problem, it will take a little bit more time yet to know. (Helms in reference to Leesburg Letter, October 28, 1973.)

"Vocal Minority"

> I find when a group has a point which they wish to make they will pick up signs and walk in front of the White House or the State Capitol in Georgia, there may be 10 or 12 of them or 15. The other side, which is the hundreds of thousands that are satisfied with things, rarely do that. (Helms, October 28, 1983.)
>
> I don't believe it is representative of the majority of either the centers or employees. (Helms, October 28, 1983.)
>
> All I'm saying is that in that work force we have out there in the centers and towers that we are talking about, it is about 20,000 people. And, you know, when you hear a small group of them talking about all the problems that affect everybody, we want to make sure we really have a problem. The small group concerns me—don't get me wrong, because it does—and you've got to react to that and you've got to do something about that, and we are doing things about that. (Van Vuren, June 27, 1984.)

NOTE.—A 1984 FAA survey of employee opinions and perceptions (a follow-up survey to the Jones Report) found that a *majority* of employees continue to experience low morale associated with a number of human relations problems and negative perceptions of FAA's human relations.

System Fully Recovered

> You have stated that "the system is back to near normal". While this may appear to be true for the travelling public and the airlines, it is *not* true for controllers.

(Letter from Leesburg controllers to Mr. Helms, August 10, 1983.)

. . . one day on the national news broadcast I watched Mr. Helms testifying before a subcommittee of Congress telling them that to his knowledge no controllers were being ordered or forced to work overtime . . . I was sitting in the cafeteria eating dinner at Leesburg, VA, working overtime that day. And I said, "If this is the case, what in the hell am I doing here?"

I went back in and my immediate supervisor told me that didn't pertain to that particular day and I would stick around for another 6 hours, which I did. (Crouse, Leesburg Controller, October 28, 1983.)

By the last day of the hearings, June 27, 1984, Chairman Levitas had lost patience with management dodges, and addressed the following statement to Admiral Engen:

Mr. Engen, let me say this, because it's not my style and I want to sort of just get right into it. I did not hear in your opening remarks—and maybe you were saving it for response to some of my questions—what I really wanted to hear.

And that was a recognition that there's a problem of significant proportion related to the capacity at present of the Air Traffic Control system, and that there is a problem of significant proportion relating to the employer-employee relations within the Air Traffic Control system; and that there was a potential problem relating to safety as a result of both of these; and that the agenda for dealing with those three problems [is] as follows.

TO CONTROL TRAFFIC OR TO SUPPORT ADMINISTRATION?

A principal role of air traffic control is to support controllers as they direct the flow of aircraft. However, FAA management somehow seems to have forgotten this at times. Mr. Galipault, of the Aviation Safety Institute, expressed this as follows:

The report in 1970 laid it all out. What was said there is still true today in my opinion, the Corson Committee Study, that a controller is the reason the facility exists so controllers do the job and everyone should support him, not anything peripheral. I think that this is where the system has fallen down.

The Human Relations Committee report which addressed the problems outlined in the Leesburg Letter reached a similar conclusion:

The controllers feel that there are too many people off the floor on details at various times. Also controllers are being used to fill vacant Area Supervisor positions. A controller who is needed to work traffic should not be filling these positions. The control room floor appears to act as a pool for administrative support, instead of the staff supporting the control room floor. The controllers feel that

> FAA has forgotten the main task at the Center, that of separating airplanes.

Jack Crouse, Leesburg Controller, also commented on this issue (October 28, 1983):

> . . . I may be totally wrong in this, but my personal observation is that once we leave the first-level supervisor and go above that level, I think they are forgetting that our mission is the safe and expeditious flow of air traffic. I am not too sure they are not more concerned with adhering extremely strictly to some rules and some regulations and making sure that the paperwork gets out on time than they are about the operation of the building.
>
> It has been my understanding of the different jobs that I have had and places I have been that staff is supposed to support the operation, not vice versa. And I think that would go a long way to helping us out, if above the first-level supervisors, if they would be more realistic in their attitudes about what is going on in the floor and what is really important.

HAVE COMMITTEES IMPROVED HUMAN RELATIONS?

Human Relations Facility Advisory Boards, and similar committees constitute a cornerstone of FAA efforts to improve human relations. Extensive information on the activities and achievements of these committees was provided by controllers, committee officers and members, facility managers, union representatives, FAA management, and members of the Jones Task Force.

The committees addressing human relations issues include Human Relations Committees (HRCs), Facility Advisory Boards (FABs), Employee Forum Committees, Supervisors Committees (SUPCOMs), and others. HRCs and FABs were the committees recently authorized by FAA consistent with its increased emphasis on human relations, and these committees were a principal focus on the hearings. HRCs and FABs have facility-level jurisdiction and thus seldom pursue regional and national issues. Generally, HRCs focus on personnel issues and FABs on operational and technical issues.

CAN COMMITTEES REPLACE MANAGEMENT?

The role of these committees vis-a-vis the traditional role of management was not easily definable. Controller Crouse criticized FAA's handling of the Leesburg Letter on the basis that the Human Relations Committee was given a management job to handle:

> . . . We did not address this letter to the Human Relations Committee. We addressed this letter to the Administrator of the Federal Aviation Administration. It was he or some of his subordinates who decided that these problems should be addressed by a human relations committee. These are problems that have occurred within the FAA, and the FAA management and supervisory personnel should be able to handle them and solve these problems.

Mr. Jones, Chairman of the Task Force, was asked by Chairman Levitas to comment on FAA's actions in response to the Leesburg Letter. Jones testified that he did not know the details of the Leesburg situation but speculated that FAA responded as follows:

> I suspect what you will find is that the response was to turn the problem over to the human relations specialist. That's not bad, but the better way, of course, is to hold the managers and people accountable for finding out what went wrong and changing whatever needs to be changed in order to solve the problem. That's the better step.

The need for management to address management's faults rather than to have human relations committees do so, was made clear by Jack Sain, Manager, Aircraft Certification Division, in an article submitted for the record, entitled "Human Relations":

> At the risk of upsetting many well-intentioned activists, I must say that we must be in a pretty sorry state to acknowledge that we need a Human Relations "Program." Going through a series of orchestrated motions may look good in activity reports . . . but what does it have to do with how people think?
>
> I don't believe that an individual's inner feelings, his or her anxieties, hang-ups and fears of insecurity are breached simply by turning on a "program." Programs which endeavor to perform management functions become convenient licenses for managers to offload their personal responsibilities since ". . . there is a program to take care of it." Let's face it, an organization with human relations problems is an organization with insensitive clods in supervisory positions. We all know who they are. But what can be done about it?
>
> Perhaps we should take the charitable course and assume that the problem individual is not aware of how he or she comes across to others. In that case, sensitivity training can help; but failure to respond to counseling and training must be followed by positive intervention by a higher level of management.
>
> Straw boss attitudes and management by intimidation have no place in an effective organization. Managers, not "programs," must address and effect corrections.
>
> Managers must recognize that certain of their selections simply don't have the total mental make-up to manage people. It's tough to admit an error, but wouldn't everyone, including the mis-appointed supervisor, be better off if problem supervisors were reassigned to non-supervisory duties? Only after this is done can structured human relations intiatives become truly meaningful.
>
> I guess what I'm trying to articulate is that management's faults must first be addressed by management, assuming, of course, that good managers far outnumber bad managers. If that assumption is false, then little hope exists of ever achieving sincere mutual trust and respect

throughout the FAA, with or without the Human Relations Program.

I am confident, however, that we will see the type of changes necessary to bring credibility to the human relations movement within the FAA. Otherwise, managers like myself will have only ourselves to blame.

WHAT IS "HUMAN RELATIONS"?

There was a lack of knowledge among many FAA employees as to what constitutes human relations. Arnold Price, Manager of the Houston Center, testified that employees responded to the question of "What [do] . . . you feel we should be doing in human relations?" with the answer "that they needed a course in human relations, itself, because there was confusion as to what it is that we should be doing to make our work better, to have a better quality of work life." Similarly, Henry Butler, with the Indianapolis Employee Forum Committee, testified that there was a "lack of education among employees as to what the Human Relations Committee is really all about." Timothy McCann, Chairman of the Chicago Employee Forum Committee, testified in a similar vein: "I find that the biggest problem in/the Center/right now is the education of the individuals."

WHAT ARE HUMAN RELATIONS COMMITTEES DOING?

Human relations committees reported handling the following types of problems:

CENTER

Atlanta.—Control room cleanliness, cafeteria, retirement reunion, and Christmas donations.

Indianapolis.—Dress codes, awards, ping-pong table, ladies lounge, and Christmas dance.

Washington.—Smoking areas, elimination of smoke, asbestos in ceiling, watch schedule, and grievance procedure.

New York.—Cafeteria, work environment, and security systems.

A panel of six Center managers and another of four TRACON managers were both asked by the subcommittee: "Are you aware of any serious personnel problems in your facility?" Most managers cited "structured staffing" as the major concern of younger staff. All but one cited retirement policy as the major concern of older staff.

Thus, the major issues of concern to employees—structured staffing and retirement—were not being addressed by the Human Relations Committees. Instead, these committees were addressing "quality of life" issues that were peripheral to employee's main concerns and to controlling traffic—smoking areas, cafeteria, recreational activities, asbestos, and awards. These were not the types of issues that the Jones Task Force addressed in its recommendations; the task force recommended improving human relations in the principal employment and operational activities of FAA.

Why haven't human relations committees addressed the major issues? The answer is not fully apparent from the hearings, al-

though some inferences can be drawn. As previously noted, human relations is generally a "foreign" concept for controllers (and managers), who feel more comfortable with operational issues; thus, they may not understand and know how to develop activities that bring about meaningful improvement in employee-management relationships. Second, human relations committees were, at the time of the hearings, in their "infancy," and may have been undertaking issues of little controversy as a way of establishing employee-management communication. Third, human relations seems to have been equated with the work environment, leading to pursuit of issues such as asbestos, smoking areas, and cafeteria. Finally, and most importantly, most major issues in air traffic control are national in scope, including retirement, staffing, resectorization, quality assurance, and overwork; however, the original order establishing HRCs directs that they limit their scope to "local situations and conditions" unless requested to provide viewpoints on national issues.

Center and TRACON facility managers testified on the extent of participation by employees and management. Generally, they reported that only a small percentage of employees participate in HRC meetings as members—usually two to five percent. Most managers estimated that only 50 to 60 percent of the employees are interested in HRC activities. Another response was that few employees take an interest in minor issues, but that most employees are interested in major issues, or in issues affecting them personally. About half of the managers, or their representatives, attend human relations committee meetings. Several managers reported that they attended initially but they believed that their attendance may have inhibited openness, so they quit going. However, most of the same managers who quit HRCs reported that they attend FAB meetings. The reason for this attendance difference was not explained, but managers generally implied that they were more comfortable with the operational problems addressed by the FAB.

WHAT ARE FACILITY ADVISORY BOARDS DOING?

The Facility Advisory Boards (FABs), which are generally responsible for operational and technical matters at the facility level, also address human relations issues at times—particularly when a facility has no HRC or when the HRC is not yet established. In August 1983, the Chicago Center FAB surveyed the other FABs in en route control centers concerning their activities and interests. Chairman Levitas summarized some of the principal survey results as follows:

> That survey is very interesting, and if it is an accurate representation, it makes some extremely important points, both to my way of thinking and, I would have thought, to the FAA management.
>
> One is that about 32 percent of the people responding said they felt that there was sort of a mix of success on this thing. It was not a great success or lack of a success. Seventy-four percent expressed concern over the level of confidence that people in the facilities have in the program. Ninety percent of the Center FABs were interested

> in participating in a national network. The level of frustration was high because of the lack of implementation of FAB recommendations. Ninety-five percent of the FABs considered structured staffing to be an important issue.

The survey showed that the following were some of the main issues addressed by FABs:

58% working on procedural issues;
21% on resectorization issues;
16% on no-smoking policies;
16% on staffing issues;
11% on training;
11% on friction between the FAB and the HRC in that facility;
5% on national policy issues at the request of FAA.

The resectorization, staffing, and training issues are relatively "major," since they address the main business of people controlling traffic. However, the other FAB issues are generally procedural in nature and thus not major.

As Chairman Levitas noted, 90 percent of the FABs favored participating in a national FAB network. Fred Gilbert, Chairman of the Chicago FAB and a full performance level controller, testified that he and many responding to the questionnaire believed that a national conference of FAB representatives would be a good way of organizing such a national network. Thus, a national conference was planned under Chicago FAB sponsorship; Mr. Gilbert mailed a letter to FABs designating a date, and site, and soliciting topics to be covered. The letter suggested that members "should try to have their facility and/or region pay for the expenses incurred." Gilbert did not coordinate this letter with his facility manager, John Bacon.

Subsequently, an FAA regional official contacted Bacon to ask him about the conference, since Mr. Gilbert's correspondence had been received. Bacon testified that he contacted Gilbert and learned about the planned national conference. (Bacon did know about the initial survey and the strong interest in a national network by the FABs. Also, Bacon favored the concept of a national network.) When Bacon called back to the regional office, he was told to cancel the conference. He called Gilbert to his office, where he told him to cancel the conference, and mentioned possible disciplinary action against Gilbert if he persisted. Bacon testified that he likely would have supported the conference if informed in advance. Also, he testified that FAA would have had no say in the matter if it were strictly a non-FAA affair; however, the suggestion in the letter that members ask FAA to pay their expenses implied that it was an FAA-sponsored conference.

Chairman Levitas expressed the subcommittee's dismay with the human relations implications of these events as follows:

> . . . what I said earlier about imagination or unimaginativeness and insensitivity, I think, strikes the three members of the subcommittee sitting here right now that if somebody in our organization came up—somebody on my staff came up—with an idea as good as that one that Mr. Gilbert came up with, I would give him a commendation.

'That is a hell of a good idea,' I would say, 'That is the kind of imaginative initiative I like to see. You are doing me a favor.' And I would praise him, not disappoint him and put him down. And that is what happened in this instance. And it is that lack of imagination, that lack of sensitivity, that I think—whether it is the type of management practices that existed before PATCO or not, the problem is the same—we want to avoid.

WHERE DO UNIONS FIT?

The National Association of Air Traffic Specialists, representing flight service station personnel (who provide assistance to general aviation, such as pre-flight weather briefings) and the Professional Airways Systems Specialists, representing the technicians who maintain FAA equipment (such as radars, radios, computers, teletypes, and so forth), testified about Human Relations Committees at the hearings. Both NAATS and PASS believed that the scope of HRCs included employment and personnel practices that legally and rightfully belonged to the unions.

NAATS testified that the HRC order significantly overlapped with the terms of its labor relations contract with FAA. NAATS had filed an unfair labor practice charge against FAA. This charge was subsequently withdrawn when the NAATS new president initiated labor relations experiments involving NAATS participation in HRC activities at two FAA sites. (However, one site experiment never worked and the other showed promise but eventually failed.)

PASS was attempting to negotiate its first contract with FAA when the HRC program was established. PASS testified that union negotiations through collective bargaining is a more effective way to improve human relations than the HRC program. PASS had "140-plus pending labor practice charges" against FAA.

The order establishing HRCs specified that employees belonging to unions were not eligible to participate in Human Relations Committees. This was subsequently modified (informally) to enable union members to belong to HRC committees if they participated as individuals, not as union representatives. NAATS viewed this policy as discriminatory against union membership. PASS viewed it as an attempt to divide and weaken the union. Neither union allowed its members to participate under these conditions. At many facilities, the lack of NAATS and PASS participation in HRCs caused a major reduction in the number of employees eligible to participate.

PERFORMANCE ASSESSMENT

How successful have the Facility Advisory Boards and Human Relations Committees been in improving human relations?

Facility managers testified that Human Relations Committees were improving communication between management and employees, and that there was a concomitant increase in morale. However, testimony was also received indicating that the effectiveness of the Human Relations Program has varied from facility to facility.

Ranking Minority Member Guy Molinari referred to this unevenness of results in this observation on March 22, 1984:

> Well, we have been sitting here for a couple of days, and what we have heard is kind of opposite ends of the spectrum on the effectiveness of HRCs. We've heard, in some areas, that they are hopeless and useless and yet we've heard testimony that in other areas they are working and working rather well.

While it is perhaps too early to draw conclusions about the ultimate success or failure of the Human Relations Program, it seems apparent that the attitude and participation of the individual facility manager will be crucial to the outcome of this program as underscored by Chairman Levitas:

> We learned yesterday that, at least in one case we had knowledge of, that when the board has a facility chief who listens and agrees with their findings, he will make the effort to bring about the change or improvement sought. It's important that these successful efforts be brought to the attention of the working controllers, who for probably good historical reasons are hesitant to consider any effort on the part of the agency to be a sincere effort. While we sometimes may find fault with the FAA, we are certainly not the least bit reluctant to acknowledge a worthy effort and a success on their part.

It is equally apparent that the attitudes and perceptions of the controllers and other employees will be crucial to the outcome. Whereas the members of these Human Relations Committees who testified were strongly supportive of the committees, facility managers reported that 40 to 50 percent of the controllers were still not interested in the program, and that interest was usually not high unless employees felt that they were directly affected. A subcommittee site report read by Chairman Levitas at the March 20, 1984 hearing found the following:

> The FAA's Human Relations Program at the Indianapolis Center is the joke of the facility. Employees laugh openly at FAA's efforts to make the program workable on paper while they continue with their prestrike policies of employees' relations. Most management personnel make a concerted effort to look good on paper, but the end results show minimal if any improvement. The more senior people do not open'-' complain about the lack of improvement because for them it is business as usual. The newer people don't openly complain because they know FAA doesn't like the boatrockers and because the older personnel are keeping quiet.

Improved human relations remains a major challenge to FAA despite the initial efforts of FABs and HRCs and the increased management attention being given. Major improvements will not happen quickly. It is increasingly obvious that human relations committees cannot substitute for sensitive participative management. Major issues are not being addressed by these committees, nor will they be as long as FAA inhibits the committees from addressing national issues on their own initiative. As a result, employee and management interest will not likely grow, since the

smoking/cafeteria/asbestos issues do not concern people as much as the staffing/retirement/overtime issues. FAA must continue to try to overcome the skeptical perceptions such as those expressed in the introductory remarks of Ernest Wickersham, Area Supervisor, Indianapolis Center, at the fifth annual FAA Conference of the Federal Managers Association, October 25, 1984:

> I asked a controller two nights ago if he had any topic he would like brought up at our Human Relations panel discussion. He asked me when it would start and I told him it would start at 1:30 Thursday afternoon. He said, "No, I don't mean when will your panel discussion start. I mean when will the agency start its human relations?" A large part of the work force in the field is still waiting to see what we are going to do.

EPILOGUE: FOLLOWUP JONES REPORT

FAA administrators testified that FAA had achieved improvements in human relations by implementing the recommendations of the Jones Report. Mr. Helms testified on October 28, 1983 that "While I feel we have made great strides in improving our management of human resources, the rebuilding period has not been an easy chore." Acting Administrator Michael Fenello stated on March 29, 1984, that "We have made substantial progress" toward improving human relations, but he also acknowledged that it "would take years" to bring about major changes in "management attitudes and interpersonal skills." Administrator Donald Engen testified on June 27, 1984 that "FAA over the past two to three years has done a magnificent job" in developing its human relations program. He also stated: "Mr. Chairman, I want to assure you that the Jones Committee Report is being implemented."

On the last day of hearings (June 27, 1984), Administrator Engen testified that Dr. Jones and his Task Force team had been asked to make another assessment of human relations in FAA:

> At Secretary Dole's and my request, Dr. Jones and his team are taking another look at the FAA to evaluate our efforts, including development of the controller employee handbook, the development of the FABs and the HRCs, SUPCOM participation, improvements in selection and training of managers in the agency, and other items like this.
>
> In addition, we are conducting an agencywide attitudinal survey, and I believe that we may be the very first Government agency to do this. And I think this is the only way that we are going to get a truly objective picture.

Chairman Levitas responded with a strong statement that the original Jones Report "has not been implemented with any seriousness." He specifically noted that if FAA had followed its own study recommendations, and if FAA had treated its controllers as professionals, morale would not have reached "such a point that we are now beginning to hear that unions are coming back . . ." Levitas' full statement and the response of Administrator Engen follows:

Mr. LEVITAS. Let me conclude this round of questioning with this area. On May 24 you said in a televised interview on one of the morning news programs: "We have continual checks of our controllers. Our controller attitudes are good."

Now, unless I read the signs differently from you, controller attitudes are not so good. After the PATCO strike it's been generally agreed, and it is also my personal observation, having visited towers and centers and monitored the in-flight conversations within the system, that there was a tremendously high morale, a gung-ho, can-do situation which existed after the PATCO walkout.

And that after three years of supervisors working boards continually, of mandatory overtime, of broken vacation schedules, of a lifestyle that is tuned to emergency but not to routine, and to an ignoring of both the Jones Report as well as the Rose Report, that morale is at such a point that we are now beginning to hear that unions are coming back because of the same problems that PATCO was complaining about. And indeed that gave rise to the birth of PATCO.

Now, that doesn't indicate to me that controller attitudes are good. The opportunity to recreate a work force of professionals who are respected and who are dealt with as adults seems to have gone by the boards. We had a once-in-a-lifetime opportunity, and now we are back to where we were when PATCO got started.

Now, did you say you are going to bring Mr. Jones back? Mr. Jones testified before this subcommittee, earlier this year.

Admiral ENGEN. It was April, I think, wasn't it?

Mr. LEVITAS. March of this year. And Mr. Jones was just amazed to find out some of the information we had about how the recommendations in his report were being implemented.

I asked him a question: "Didn't you find that one of the primary weaknesses in FAA's management system prior to the strike was basically the same, that there were poor people skills, poor management relations?" Mr. Jones said: "Yes, indeed."

And my question is, what do you expect to get out of another Jones Report? If you read the Rose Report or his last report, my guess is that you are going to read the same thing in the next report.

The problem has been identified, and the problem's solutions have been identified. The problem is, based not on speculation, Mr. Engen, but testimony, reports, letters, and investigation, that the Jones Report has not been implemented with any seriousness. It's been done cosmetically.

And I am suggesting that if FAA had followed its own paid-for report, Rose or Jones or you name it, you wouldn't see the Atlanta Center being organized, you wouldn't see the Washington Center being organized, and you wouldn't

see us back in the place we were after that tremendous disruption of our system in 1981.

Admiral ENGEN. Yes, sir. If I could start with Mr. Jones, the reason we did bring him back was to evaluate just how we are implementing the recommendations and to find out and give me a report card as to the facts that you were just reciting to me.

I want very much to be sure that we take advantage of his first report. He's coming back again to be sure of that—and tell me the unvarnished truth about how we are implementing it. . . .

I agree with you, and I am concerned about attitudes. And when I spoke on May 24 and made that statement, perhaps I was giving one side of the coin, because I had gone out and sampled. At that point in time the people I talked to were very supportive . . .

But I am interested, Mr. Chairman, and I want to make those recommendations that Mr. Jones made to us work.

Has there been substantial progress in human relations as Administrator Engen and his predecessors have maintained? Or, has there been little progress as the subcommittee has concluded? The second Jones Report (Jones II) should help to break this deadlock. Following are some of the morale and human relations findings of both the Jones II Task Force summary and a simultaneous agency-wide survey of FAA employees conducted by CAMI, both of which were completed after the hearings.

AGENCY-WIDE SURVEY CONDUCTED BY CAMI

A research team of the FAA's Civil Aeromedical Institute (CAMI) conducted the agency-wide survey of working conditions, policies, and practices. The questionnaire was distributed to all agency employees in July 1984. Nearly 26,000 completed questionnaires were returned, representing about 55 percent of FAA employees. The results were reported in a November 15, 1984, letter from Administrator Engen to all employees in which he indicated: "Some of you asked whether there will be any real change as a result of feedback from the survey. Let me assure you that changes will occur."

Some of the principal results of this survey with respect to FAA *human relations* issues are:

(1) Half the *employees do not believe that management is generally committed to improving human relations, or that organizational authority/responsibility is appropriately shared.*

(2) Over two-thirds of the *employees reported seeing no change or only a little positive change in the agency's emphasis on managing people.*

(3) Almost 55% of all *employees felt that management generally does not: (1) consider the impact of change on personnel; (2) keep them informed about what is happening within the agency nor provide sufficient and/or timely information on how proposed changes will affect them; nor (3) do changes made agree with initial information provided.*

(4) Slightly over half of the *employees see little indication that the organization tries to improve working conditions, has an interest in employee welfare/satisfaction, or has policies/practices/conditions that encourage them to work hard.* (emphasis added)

A further analysis was needed to provide some breakdown of the results pertinent to the Air Traffic Control segment of FAA—one of the ten FAA organizational units surveyed. For the issues underlined in (1) and (2) above, Air Traffic Control employees gave FAA the lowest rating of any FAA unit. For the issues underlined in (3) and (4), employees in Air Traffic Control and Airways Facilities provided the lowest ratings. Thus, in most cases, controllers and other ATC employees viewed management and human relations activities more negatively than the rest of FAA.

The CAMI results were not entirely negative. Following are some of the positive findings:

> Besides pay and job security, employees responded positively to the high performance expected of them, describing their duties as clearly defined and with sufficient time to do them. More than 80 percent rated their supervisors as administratively and technically competent. Approximately 70 percent felt challenged by their jobs.
>
> On the issue of employee relationships, some 80 percent of respondents indicated respect for the people they work with and a willingness to go to them with a work problem. More than three-fourths of the respondents said they experience a high degree of cooperative teamwork among employees.

These positive findings generally fall in the pay, technical competence, job reward, and teamwork areas; thus, they serve to further contrast the negative human relations responses. Moreover, in these positive cases, ATC personnel generally rate the FAA higher than do other units; for example, ATC personnel give good pay and job security the second highest rating of all FAA units, and they give clarity of job duties the third highest rating.

Jones revisited

The Jones Task Force described the approach taken in its second study, *Report of Findings 1984: Task Force on Management and Employee Relationships,* as follows:

> . . . the Task Force undertook [on July 5–9, 1984] an extended trip to 14 facilities around the country. In addition, various Task Force members subsequently visited three other major facilities. In all, the format of the visits was substantially the same: following a brief session with the Facility Manager, Task Force members split up and interviewed a sample of persons drawn from the ranks of area managers, area supervisors, controllers present in 1981, and controllers hired since 1981. Selection of specific persons to be interviewed was largely left to facility management.

With only a few exceptions, we found facility management to be cooperative and responsive. The interviews were private and confidential, and those interviewed seemed quite willing to be open and candid./About 130 interviews conducted./

In addition, the Task Force arranged with CAMI staff to include in their impending survey of FAA employees four sets of measures from the 1981 survey conducted by the Task Force./Only three were used./It was intended, and hoped, that these key indicators would permit at least some assessment of change during these last three years.

Two of these key indicators and the results achieved by applying them were described in the report as:

Concern for People.—a three-item index measuring perceived importance attached by the organization to human beings.

Organization of Work.—a four-item index measuring how well the human work situation is organized.

The overall picture on both indexes is one largely of non-change. Compared to groups in similar functions nationally, the scores were extremely low in 1981 and remain low in 1984.

A third indicator, entitled *Burn Out/Bounce Back,* represents a "four-item index measuring stress and burnout, adapted from the work of Rose, et al." (This is the Rose Report discussed in the Controller Stress section.) The application of this index gave the following results:

The overall burnout rate has nearly doubled since 1981.

The burnout rate for management and supervisors is, if anything, higher than that for controllers.

Higher burnout rates now extend down into the 10–14 year service category, which was probably not true, or not true to this extent, in 1981.

The overall conclusions of the Task Force were:

(1) working relationships vary more widely from facility to facility than was true in 1981–82; (2) that, overall, working relationships are poor and little better than before, probably worse than they were in 1982 and trending toward the conditions in pre-strike 1981; and (3) that no attention was paid to the Task Force's clear warnings in 1982 about the impact of traffic volume and variability on organization efficiency and stress.

It should be noted that in the periods subsequent to the recent study, some of the issues disturbing people have been clarified (such as the new Quality Assurance Program); constructive actions have been taken in areas experiencing exceptional traffic crowding; the line of command for AT facilities has been centralized; and other significant moves have been initiated. While most of these actions are relevant to the problems, and we hope our interim reports have been helpful to this process, there remains within the

> Agency, in our opinion, a serious weakness in terms of competent people-focused management, an inadequate system for monitoring and correcting traffic volume imbalances, and a general attitude of giving lip service to the concerns voiced by work such as the "Jones Committee" while protecting a "business-as-usual" mentality.
>
> In summary, change in the direction needed and at a pace sufficient to estop future crises is not as yet evident within the FAA.

The principal recommendations of this second Jones Report seem tougher in tone and are appreciably shorter than the 13 recommendations in the original report; the "Jones II" recommendations are:

> 1. The Agency must recognize that it is dealing with a very difficult situation which, if not handled forcefully and effectively, will lead to problems of the type that have proven to be excessively costly to the nation over the last fifteen years.
>
> 2. The Agency must identify those managers who are unable or unwilling to create reasonable teamwork conditions within the groups they manage; identify those who can and will; and make the appropriate reassignments even if this requires special legislation to enable such executive action.
>
> 3. The Agency must define accurately those facilities and organizations where a reasonable teamwork environment is not present and is difficult to achieve even with skillful leadership. These would tend to be the larger, more complex organizations. Once identified, a professional and substantial effort must be undertaken to facilitate change . . . .
>
> 4. The Agency must correct excessive workload situations and moderate short-term variability in work activities . . . .

Thus, Jones and the CAMI survey results in 1984 concluded that human relations has not improved since the strike, that working relationships are "probably worse than they were in 1982 and trending toward the conditions in pre-strike 1981," and recommended that the problem be faced squarely and that strong actions be taken. These conclusions are consistent with the extensive testimony taken under oath before this subcommittee and reflect our basic concerns. The subcommittee has been proven "right" in its debate with FAA over human relations progress or, rather, lack thereof. As Chairman Levitas said on the last day of hearings: "My guess is that you are going to read the same thing in the next [Jones] Report."

Declining Morale

Our subcommittee found that controller morale was quite high immediately after the strike, but that it has been on a downhill track ever since. The following exchange between Congressman Andrews and Jack Crouse, Leesburg controller, reflects what we

have heard time and again from controllers, supervisors and even managers close to the situation:

> Mr. ANDREWS. What is the status of the morale since the PATCO strike?
>
> Mr. CROUSE. Well, Mr. Andrews, as the chairman of the subcommittee in his opening statement remarked, immediately after the strike, there was a pull together, gung ho attitude, "We are going to do it, we can do it," and that existed for quite some time, not only among the controllers, but the first-level supervisors, the staff and up through the entire organization. However, after the initial shock of all this wore off, we found out that in fact maybe we had done too good of a job and had been rebuilding the system possibly too quick with too few people.
>
> At that time, we were voluntarily working overtime and felt it was for the good of the operation and air traffic safety and we knew it had to be done, but after you have done that for about two years, you get a little tired of the overtime and you get a little tired of permanently working radar sectors. There are days when just like you and anyone else in their job, you have good days and bad. I might have a day when I come in and I am not up to full performance and rather than work radar today, I would rather work it for a couple of hours and then work a manual position for a relief from the regular pressures.
>
> I don't want to take sick leave. I am not ill, but I am not up to peak. As it stands now, I am strictly a radar controller. Very seldom, only on one sector out of six in my area, do I ever work a D-side because of the shortage in personnel, because of the fact that the new people in training have to be trained. If I am not working a radar myself, I have to monitor someone else. The gung ho attitude has gone away, Mr. Andrews. We are now in a position where I feel the airline industry and the air carriers believe that we are almost back to 100 per cent or maybe even 105, and that we are capable of giving them just about anything they want. I don't feel that they realize how much some of their requests take from our time.

After a somewhat confrontational hearing with FAA on October 28, 1983, Chairman Levitas addressed the following statement on the origin and importance of morale to Administrator Helms:

> Mr. LEVITAS. I think today's hearings were very important. My concerns are very clear on this entire subject, that as we rebuild the air control system we provide enough seasoned full performance level controllers to handle the volume of traffic that is being put into the system. I thought one of the more interesting comments today—that I had not heard previously, I had not thought about it—is that one of the reasons the system has performed as well as it has under the circumstances is that this cadre of dedicated professional controllers really went all out and were performing above and beyond what is in

fact normal performance to help the agency and the traveling public over a period of great difficulty.

They did so and FAA did so, with a remarkable performance. Instead of accepting the fact that that was an unusual situation, apparently at least in the minds of some, it came to be regarded as the normal situation, and this in itself has created perhaps some morale problems. But the concern is that we should not, as we see the system expanding in terms of additional traffic and as we see retirements coming in of your seasoned controllers, assume that because there are numbers of warm bodies there that we are assured, as a result, of the same quality of performance. Because in the absence of that we will have a perpetuation of unusual overtime requirements, and the morale problems will be unresolved otherwise at the Leesburgs around the country. In the last analysis, that which you set out to achieve and have achieved in terms of performance to this point may be lost.

Mr. HELMS. Yes, sir. I understand.

The pilots, whose safety and that of their passengers depends upon the performance of the Air Traffic Control system, also sensed that controllers were being overtaxed and that morale had been falling. Captain Duffy, President of ALPA testified to this, as follows:

One of the good things that happened after the PATCO strike and we reinstated the system was there was an extreme amount of good will between the pilots and the controllers, and it was really a good functioning system and now the edge is starting to creep back into the system again and into the voices of the people that we talk to.

I guarantee you that these guys that were up here in front of us, I mean we can sit down with them and we get them on our jump seats and we all talk the same language, but when everybody gets strained and uptight, it starts to show, and when they have been working 6-day weeks and overtime that is going to start to tell after a while and it is starting to tell now we think.

During the June 26, 1984 hearing, two controllers and a supervisor were asked the question, "How is morale?" One responded that morale is "less than good," another that it is "low," and the third that it is "poor". They testified that some of the factors negatively influencing morale were (1) communications filtering so that controller problems do not get through to top management, (2) structured staffing, (3) continuation of a restricted leave policy, and (4) strains placed on controllers by the policy of virtually unrestricted air traffic.

On the last day of hearings, Congresswoman Johnson made a very important summary statement concerning FAA's poor human relations and its effect on employee morale. She made a key point that only managers who are sensitive and responsive to people—and not human relations committees—can produce the sorely needed improvements in morale:

Well, let me just say that one of the tragic aspects of this whole thing, when you sit and listen to the people who did the work in those days of great pressure, the reason it worked was because everyone did their maximum, and everyone respected one another for doing that. And in a sense, management's back was so to the wall that they gave their personnel the kind of respect that they deserved.

And what is truly unfortunate is that, as we have moved back, we have moved back into a more bureaucratic system in which a person cannot complain about being quick-turned three days in a row, and have it received in any but a negative manner.

The particular group I was talking to was at a facility that has an FAB Board. They also have a Human Relations Committee. They have not worked. They have not worked because, in the end, those things are not nearly as important as the response of the manager to the people's concerns. Long before those things were popular in this particular situation, they had a manager who knew how to manage, and they did not have these problems.

So, in the long run, it is very much like an education and the building principle. If you do not do something to get those people to understand the importance and the value of their own personnel, you are just not going to win. I do not see any way, from Washington, that you can do it unless you are able to get your own people out there in the front line to work with their supervisors and their controllers in a position of true respect, responsiveness, teamwork, and all of those things.

It is so simple yet we on this committee, over the last year and a half, have watched the situation go from mediocre to poor to bad, and we do not have another year. That is, I think, what I am concerned about. We do not have a year for study. We do not have a year for you to learn, and I would urge you not to just listen—much as I respect you, Mr. Van Vuren—but we cannot afford to have you the prisoner of your own bureaucracy.

And I know from what you have said today that you have made some effort not to be captive. But the system has not demonstrated its ability not to be captive over the last year and a half, and time is truly running out.

Admiral ENGEN. I can't argue with what you're saying. I wouldn't.

Thus, morale has declined appreciably since the strike and the major causes are: (1) continued stress and overwork associated with not enough experienced controllers to handle the traffic allowed into the system, (2) poor human relations in FAA—and communication filters—leading controllers to feel that they are powerless to improve their situation. *Low morale is the result of the very problem areas addressed in this report; low morale, in turn, serves to amplify the effects of these problems; thus, a negative spiral has been created.*

Low morale has also fueled employee interest in a new union. Controller Damalas, Atlanta Center, testified to this effect:

> A union will be formed of sorts in Atlanta Center and throughout the country. A petition I believe is with AFGE right now and it will probably be filed due to the FLRB shortly to form a union. The controllers there feel that they need some sort of representation. They really don't look to gain anything. What they want to do is try to hold on to what they have. Everything that they have got seems to be falling from their fingertips. They are being overworked; they have no representation and they can't do a thing without somebody going up and being able to represent them.

Controller Crouse, Washington Center, indicated in the following response to a question by Congressman Rowland that a principal reason for this unionization movement is to give controllers "a voice that can really be heard by FAA":

> Well, Dr. Rowland, as Mr. Molinari pointed out earlier, we were discussing FABs and we were discussing HRCs and there of course is always the direct supervision route that you can go to solve problems within the FAA. However, as I mentioned earlier, morale at the Washington Center started going downhill in the summer of 1983 and it has been going downhill ever since, and controllers are beginning to feel the only way that they will have a voice that can really be heard by the FAA is if they organize formally and officially.
>
> I think many of us were in hopes after 1981 that possibly there would be no need for another controllers' organization, and as I stated in my opening remarks, although I was a member of PATCO, I was not a very strong member and that I was opposed to the strike of 1981. I am still opposed to that strike. However, since there has been no bargaining unit for controllers in the last almost three years, we don't have a checks and balance system any more between labor and management.
>
> I personally do not look at the organization of a controllers' union that it has to be an adversary relationship. Again, I state that I would hope that this does not turn into an us against them attitude. That is not what we want.
>
> We feel that the best way to solve controller problems are with controllers coming up with the solutions, and we feel that the labor organization will help us get the FAA's attention to solve some of these problems and to have them take a long, hard look at some of our solutions, whereas now they really don't have to, Dr. Rowland.

Thus, a new controller union movement is underway and it is being fueled, not by demands for more pay, and benefits, but by the low morale and by the many problems highlighted during our hearings. The controllers are frustrated both by the overwork problems

they face and by their inability to get management to listen to these problems, and then to act upon them.

Conclusions

Serious problems continue to exist within the Air Traffic Control system.

The first—and most important—has to do with what the subcommittee perceives to be a diminishing margin of safety. Stress, fatigue, staffing shortages, increasing traffic, lack of supervision and an unseasoned work force have all impacted the margin of safety.

It is apparent to the subcommittee that FAA made a conscious decision early on in the recovery process to return the system to 100% of pre-strike capacity as quickly as possible, and was willing to have controllers shoulder the burden to do so.

The price of this back-to-normal-as-soon-as-possible philosophy was, for controllers, a work environment that was anything but normal. As traffic was allowed to expand with removal of such restrictions as flow control and slot allocation, a controller work force severely reduced in both numbers and experience was expected to work continued overtime, to work long periods of time on radarscopes without relief and to forego vacation plans. Traffic levels, rather than being governed by available manpower, were dictating working conditions.

Controller morale, which had been high following the strike, plunged after controllers realized that the recovery period would be prolonged; FAA, meanwhile, was maintaining that everything was normal. In fact, everything was not "normal." Broad system averages presented by FAA during the hearings masked high overtime and other conditions of overwork. Supervisors, who presumably should have been supervising, were controlling airplanes because FAA had decided to allow traffic levels to rise before returning supervisors to normal duties. Full performance level controllers, in addition to performing control duties, were responsible for providing on-the-job training to developmental controllers. Developmentals, once certified, were training new developmental controllers.

The controller work force cannot be considered to be fully recovered until the experience level represented by full performance level controllers is replaced. The number of experienced controllers has declined by almost one-half, and that experience level will not likely be replaced for several years. The subcommittee believes that as long as supervisors are working regularly as controllers—as extensive testimony indicated—there is an insufficient number of controllers in the work force. In addition, traffic volume has increased dramatically since the strike and flight scheduling has been peaking at major airports. These important factors are not reflected in FAA's goal for a recovered controller work force.

In its May 1983 follow-up report on the ATC system the National Transportation Safety Board concluded that numerous unreported operational errors were occurring daily in ATC facility operations. Prior to FAA's Quality Assurance Program, it was the responsibility of controllers and first-line supervisors to identify and report such errors. In theory the advent of QAP signaled an improved

system of the identification, and by inference, reporting, of operational errors.

However, in June 1985, FAA revised upward its count of near mid-air collisions from 286 to 478 (1983), and from 297 to 592 (1984). The number of near mid-airs was 359 in 1981 and 311 in 1982. Such large increases in near-collisions raise doubts about the margin of safety in the system, and such large adjustments in these numbers raises questions about FAA's collection and reporting system.

Little tangible progress has been made in the area of management and human relations since the 1981 strike. The same human relations problems that existed before the strike—an adversarial relationship between labor and management, ineffective communication between labor and management, management's failure to acknowledge problems that have been identified, and management's giving a higher priority to supporting administration than to supporting actual air traffic control operations—continue to exist.

Although some FAA managers have maintained that "The trouble walked out on August 3, 1981," the adversarial relationship between FAA and PATCO has been replaced by an almost identical employee-management polarity which followed a brief post-strike "honeymoon period." Layers of communication filters between top management and the work force have resulted in those at the top of the organizational structure and those at the bottom having different views of the air traffic control world. Top management is often unaware or misinformed about what is happening "in the trenches." Controllers have great difficultly understanding management initiatives or programs. Ineffective communication continues to be a great source of frustration, and to play a significant role in perpetuating the adversarial labor-management relationship in Air Traffic Control.

The Jones Report, contrary to FAA's contention, has been implemented cosmetically. The second Jones Report and the agency-wide CAMI survey, both conducted in 1984, plus extensive testimony taken under oath before this subcommittee, confirmed that human relations has not improved since the strike, and that working relationships are probably worse than they were in 1982. Had FAA followed its own study recommendations, and had FAA treated its controllers as professionals, we would probably not have reached the point at which unions are again being organized.

An autocratic management style still thrives within FAA. Although Human Relations Committees and Facility Advisory Boards have been established to provide forums on working conditions and personnel policies, these committees have not meaningfully addressed major issues such as staffing levels, overwork, stress, resectorization and quality assurance. The scope of HRCs and FABs is generally limited to local situations and conditions. These committees cannot—and should not—be a stand-in for good management.

FAA's public assurances that the system has returned to normal has created poor morale among controllers, who feel that overtime, increased traffic, lack of input into decisions affecting them, continued training of developmentals, and denial of sick leave and annual leave are anything-but-normal and should be faced and addressed by management.

FAA initially refused to acknowledge the potential impact of controller stress during subcommittee hearings, taking the position that air traffic control was not a uniquely stressful occupation. The Rose Study—the most comprehensive of approximately 28 FAA-sponsored studies on stress—rated hypertension as the greatest single hazard of working as an air traffic controller, and found that the incidence of hypertension in controllers was about 50 percent greater than that of men in the general population. The Rose Study also found psychological problems among controllers that appeared to be related, in part, to the job and the environment in which controllers spend their duty time. These findings were buttressed during our hearings by the testimony of stress authorities, who stated that stress exists in the controller occupation, can have a very debilitating effect, can be detected and measured, and should be monitored and treated by FAA. Our hearings also found that stress can be exacerbated by management practices.

Despite the findings of the Rose Report, completed in 1978, and the subsequent executive summary, FAA maintained during our 1983 hearings that stress had not been quantified. No program for the systematic monitoring and treatment of stress had been put in place. The original Rose Report received little public dissemination by FAA. The subsequent executive summary, although drafted in 1982, had yet to be approved by FAA, and thus had not been distributed. Subcommittee concerns over FAA's failure to release the results of this important stress research apparently led Acting Administrator Fenello to testify in April 1984 that he thought it was time to distribute this summary of the Rose Report.

We hoped that these hearings would provoke FAA to take concrete action to ensure that there is a full understanding of the effects of stress—how it can be treated, how it can be minimized and how it can be detected in the first place. To that end, we are encouraged that over the course of these hearings, FAA's position on stress shifted from denial of the problem to that of concern accompanied by increased action. FAA has, for example, adopted a checklist of warning signs to be used to detect stress and fatigue. The depth of the agency commitment to an ongoing stress monitoring program, however, is still questionable.

Thus, FAA has a propensity to dance around its problems by either not implementing the study recommendations, as in the case of the Rose Report, or cosmetic implementation, as with the Jones Reports. In the management area, FAA contends that the system has returned to normal and asserts that the problem left with PATCO; but the Jones studies have shown that the management problems created by FAA continue to exist, and only FAA can rectify them—with major surgery. The studies to identify the stress and management problems have been conducted; the problems are real and are major. FAA should stop waltzing around its problems, stop sponsoring additional studies that waste tax dollars and start implementing the recommendations.

Chairman Levitas emplaced the capstone to these hearings in the following admonition to Administrator Engen at the completion of 12 days of hearings:

I am convinced that there are serious problems that you as Administrator of FAA need to address in the Air Traffic Control system. Obviously, the first one has to do with safety. I have heard enough testimony, read enough reports and memoranda in recent weeks and months that talk about narrowing the margin of error, too much traffic, too few controllers, and that safety is in jeopardy, not to believe that there is a diminished margin of safety within the system that must be addressed in the short term.

There are various ways in which it can be addressed. Two of them are increasing the capacity of the system, which may or may not lead to the bringing onboard of experienced and seasoned controllers, or the reduction of traffic, and certainly not permitting any significant increase in traffic within the system during peak periods and adverse flight conditions.

The second major problem that I have got is the personnel situation within FAA. Morale is low as compared to the way it was after the PATCO walkout, and it is getting lower. The problems of stress, fatigue, overtime, and nonroutine work environment conditions exist, and are creating morale problems. They are not being addressed in a meaningful way, and that also is contributing to or exacerbating the safety problem that I mentioned earlier.

I am also concerned that again and again . . . that what is being heard in the upper floors of the FAA building is not what is being heard by those of us who are talking to the troops in the trenches who are controlling traffic and working the centers. And you need to put in place a system to break through that information block, or else you are never going to be able to improve the system. . . .

I personally believe you have got to take some really very strong action and motivate, shake up, or change, or do something so that we do not repeat this same hearing.

Recommendations for FAA

STRESS

1. Accept stress as a major problem affecting controllers.
2. Reduce stress by developing a well-thought-out program that:
   (a) Addresses stress-causing conditions in the control environment, particularly poor human relations management and too much traffic;
   (b) Mitigates the psychological and physical effects of stress on controllers.

HUMAN RELATIONS AND COMMUNICATIONS

1. Accept poor human relations as a problem having profound impacts on controllers.
2. Take strong action to improve human relations and to develop a participative management style through:

(a) Incorporating the voice of controllers into major traffic control decisions and treating controllers as professionals;

(b) Hiring and promoting managers that use effective human relations skills and replacing managers that do not. In other words, holding managers responsible and accountable for effective human relations;

(c) Reorganizing and revamping ATC organizational responsibilities, as necessary, to reduce communications filtering and to improve human relations.

CONTROLLER STAFFING

1. Accept that the controller work force is too small and that there are far too few experienced controllers.

2. Build a larger, better trained, and much more experienced controller work force. Return supervisors now working as controllers to their supervisory duties.

TRAFFIC VOLUMES

1. Accept that the traffic volume in the ATC system generally exceeds the capabilities of controllers to handle such traffic under conditions of "normalcy."

2. Use restrictions to reduce the volume of traffic until the controller work force, and its experience level, has been matched with the "normal" capabilities of the controller work force. Allow traffic above this level only as controller numbers and seasoning increases.

MARGIN OF SAFETY MEASUREMENT

1. Accept that FAA's detection and reporting system has not adequately measured the margin of safety in Air Traffic Control.

2. Revamp the detection and reporting system to provide comprehensive measurement of unsafe practices—and their severity—and to provide full and timely public disclosure to the users and operators of the system.

OVERSIGHT FOUNDATION

We plan to use the recommendations and conclusions from this report as a principal basis for continued oversight of air traffic control. Thus, we strongly recommend that FAA begin implementing these recommendations and responding to these conclusions, and be prepared to demonstrate substantial progress at future oversight hearings.

○